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PHYTOLOGIA

An international journal to expedite plant systematic, phytogeographical and ecological publication

Vol. 77 August 1994 No. 2

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Phytologia (August 1994) 77(2):81-82.

MIMOSA RUPERTIANA B.L. TURNER, A NEW NAME FOR *M. OCCIDENTALIS* (WOOTON & STANDLEY) B.L. TURNER, NOT *M. OCCIDENTALIS* BRITTON & ROSE

B.L. Turner

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ABSTRACT

The recently proposed *Mimosa occidentalis* (Wooton & Standley) B.L. Turner (1994) is homonymous with the earlier *M. occidentalis* Britton & Rose (1928) and therefore illegitimate. The former is replaced by **Mimosa rupertiana** B.L. Turner, *nom. nov.*

KEY WORDS: Mimosaceae, *Mimosa*, Texas

Rupert Barneby has kindly called to my attention a sloppy error on my part in which *Schrankia occidentalis* Wooton & Standley is transferred to *Mimosa* as *M. occidentalis* (Wooton & Standley) B.L. Turner, a homonym of *M. occidentalis* Britton & Rose (Turner 1994). This error was made in spite of the fact that Barneby (1991) has all of the New World nomenclature of *Mimosa* neatly catalogued in his exceptionally crafted "Sensitivae Censitae."

MIMOSA RUPERTIANA B.L. Turner, *nom. nov.* BASIONYM: *Morongia occidentalis* Wooton & Standley, Contr. U.S. Natl. Herb. 16:135. 1913. Not *Mimosa occidentalis* Britton & Rose (1928).

I am proposing the present name fully aware that there already exists a *Mimosa barnebiana* Firtybati & Tressens honoring the remarkable Rupert Barneby for his extraordinary work on the genus *Mimosa*. Indeed, the additional eponym created here for this very distinctive member of yesteryears' *Schrankia* does not, in my opinion, honor the man sufficiently. In truth he is a hero of mine, although we may disagree as to the rank of this or that element within *Mimosa*.

ACKNOWLEDGMENTS

I am grateful to Rupert Barneby for calling to my attention the nomenclatural error concerned and to Guy Nesom for reviewing the paper.

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Turner, B.L. 1994. Texas species of *Schrankia* (Mimosaceae) transferred to the genus *Mimosa*. Phytologia 76:412-420.

Phytologia (August 1994) 77(2):83-88.

THREE NEW COMBINATIONS IN *ANEMONE* (RANUNCULACEAE) FROM NORTH AMERICA

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ABSTRACT

Three new combinations, **Anemone multifida var. stylosa**, based on *A. stylosa* A. Nelson, **A. narcissiflora var. zephyra**, based on *A. zephyra* A. Nelson, and **A. quinquefolia var. minima**, based on *A. minima* DC., are made. In addition, a lectotype is proposed for *A. zephyra* and the previous selection of the lectotype for *A. stylosa* by Boraiah & Heimburger is discussed.

KEY WORDS: Ranunculaceae, taxonomy, *Anemone*, North America

INTRODUCTION

In an examination of the North American representatives of *Anemone* (Ranunculaceae), the authors have concluded that the following combinations are necessary.

TAXONOMY

Anemone multifida Poir. var. **stylosa** (A. Nelson) Dutton & Keener, *comb. & stat. nov.* BASIONYM: *Anemone stylosa* A. Nelson, Bot. Gaz. 42:52. 1906. SYNTYPES: UNITED STATES. Utah: Fish Lake, *M.E. Jones 5763 & 5764*. (LECTOTYPE [chosen here]: *M.E. Jones 5763* [RM 14559!]; Isolectotypes: RM!,US!).

Rydberg (1917) treated *Anemone stylosa* as a synonym of *A. tetonensis* Porter *ex* Britton as did Welsh *et al.* [1987; *A. tetonensis* as *A. multifida* Poir. var. *tetonensis* (Porter *ex* Britton) C.L. Hitchc.]. However, Boraiah & Heimburger (1964) concluded that *A. stylosa* is a distinct species based on cytotaxonomic evidence. In light of both morphological and cytological data, we have concluded that *A. stylosa* is most appropriately treated as a variety of *A. multifida*.

In the protologue of *Anemone stylosa*, Nelson (1906) cited two M.E. Jones collections (*5763 & 5764*) as syntypes. In their selection of the lectotype of *A. stylosa*, Boraiah & Heimburger (1964) cited *M.E. Jones 5763* which they claimed was deposited in ARIZ. Furthermore, they concluded that Nelson's other syntype (*M.E. Jones 5764*) is actually *A. multifida*. We agree with Boraiah & Heimburger's taxonomic conclusions regarding the two Jones collections, but attempts to locate the sheet they selected as the lectotype at ARIZ have failed. As Nelson was stationed at RM (Williams 1984), we interpret Boraiah & Heimburger's citation of ARIZ as an "error" and are "correcting" their citation of the herbarium of deposition to RM. Furthermore, there are two sheets of *M.E. Jones 5763* at RM, one of which is indicated as "type" by Nelson. It is this sheet, *M.E. Jones 5763* (RM - 14559), which we designate as the lectotype.

Anemone multifida var. *stylosa* is distributed in Arizona and Utah at elevations from 2700 to 3700 m. It is distinguished from the three other varieties of *A. multifida* by its solitary flower, single tier of involucral leaves, purple to red or green to red sepals which are uniform in color on both surfaces, and strongly hooked achene beaks. *Anemone multifida* var. *tetonensis* has 1 or 2 flowers, 1 or 2 tiers of involucral leaves, blue, purple, or occasionally white sepals which are uniform in color on both surfaces, and recurved achene beaks. *Anemone multifida* var. *saxicola* has 1 to 3 flowers, 1 or 2 tiers of involucral leaves, sepals which are white or yellow on the upper surface and red, purple, or blue on the lower surface, and more or less straight achene beaks. *Anemone multifida* var. *multifida* has 2 to 7 flowers, 1 or 2 tiers of involucral leaves, sepals which are green to yellow, blue, purple, or red on both surfaces or are rarely white or yellow on the upper surface and blue or red on the lower surface, and more or less straight achene beaks.

Additional Specimens Examined: UNITED STATES. Arizona: Coconino Co.: on Humphrey's Peak of San Francisco Mountain, 7-10 Aug 1898, *Mac-*

Dougal 399 (GH). Utah: Cache Co.: talus slopes following snow above White Pine Lake, 17 Jul 1936, *Maguire 14095* (US); Garfield Co.: Bryce Canyon, 10 Jul 1932, *Weight B-32/307* (US).

Anemone narcissiflora L. var. **zephyra** (A. Nelson) Dutton & Keener, *comb. & stat. nov.* BASIONYM: *Anemone zephyra* A. Nelson, Bot. Gaz. 42:51. 1906. - (LECTOTYPE (chosen here): UNITED STATES. Colorado: along streams, summit of North Park Range, Larimer Co., 10 Aug 1903, *L.N. Goodding 1834* [RM 51668!]; Isolectotypes: GH!,RM!,US!) - *Anemonastrum narcissiflorum* (L.) Holub subsp. *zephyrum* (A. Nelson) W.A. Weber, Phytologia 41:486. 1979.; *Anemonastrum zephyrum* (A. Nelson) Holub, Folia Geobot. Phytotax. 8:165. 1973.; *Anemone narcissiflora* L. subsp. *zephyra* (A. Nelson) A. Löve, D. Löve, & B.M. Kapoor, Arctic Alpine Res. 3:149. 1971.

Anemone narcissiflora L. and its close relatives are a highly variable group of plants. This variability has led systematists to several different conclusions regarding the placement and rank of *Anemone zephyra* A. Nelson, one such closely related plant. Rydberg (1917) accepted *Anemone zephyra*, while Dorn (1977) treated it as a synonym of *Anemone narcissiflora*. More recently, Weber *et al.* (1979) placed the plant in the segregate genus *Anemonastrum* as a subspecies of *narcissiflorum*. We do not accept this segregate genus, as Hoot *et al.* (1994) have clearly established its placement within *Anemone* sensu lato. We conclude that *Anemone zephyra* is most appropriately treated as a variety of *Anemone narcissiflora*.

Nelson (1906) did not cite any specimens in the protologue of *Anemone zephyra*. He did, however, state that "the proposed species probably includes all the specimens from the Rocky Mountains of the United States distributed as *A. narcissiflora* or *A. albomerus* (ined.)." There is a specimen at RM identified as *A. albomerus* A. Nels. *sp. nov.*, which Nelson indicated as "type". It is this sheet, *L.N. Goodding 1834* (RM - 51668), which we designate as the lectotype for *A. zephyra*.

Anemone narcissiflora var. *zephyra* occurs in Colorado and Wyoming at elevations from 2700 to 3900 m. It can be differentiated from the other two North American varieties by the unlobed lateral segments of the involucral leaves, 40-60 stamens, yellow sepals, and 5 mm long achene bodies. *Anemone narcissiflora* var. *monantha* has unlobed lateral segments of the involucral leaves, 40-60 stamens, white or white and blue sepals, and 6-9 mm long achene bodies, while *A. narcissiflora* var. *villosissima* has lobed lateral segments of the involucral leaves, 60-80 stamens, white or white and blue tinged sepals, and 6-9 mm long achene bodies.

Additional Specimens Examined: UNITED STATES. Colorado: Chaffee Co.: South Cottonwood Gulch, in rich pine woods, 9 Jul 1892, *Sheldon 328*

(US); Grand Co.: moist soil, Milner Pass, 11 Aug 1921, *Clokey et al. 4105* (US); Gunnison Co.: on the high ridge N of Cottonwood Pass on the Continental Divide, 20 miles W of Buena Vista and 13.5 mi E of Taylor River Road at Taylor Park Reservoir, 5 Aug 1986, *Reveal & Broome 6344* (MARY); Jackson Co.: rich soil - banks of Michigan River, North Park, 28 Jul 1884, *Sheldon 121* (US); Pitkin Co.: along Colorado Hwy 82 in a subalpine graminoid meadow along Roaring Fork Creek, about 0.8 mi NE of Independence (site) and 3.2 mi below Independence Pass, 3 Aug 1986, *Reveal & Broome 6246* (MARY). Wyoming: Johnson/Sheridan cos.: head of Big Goose Creek, Big Horn Mountains, 15-24 Jul 1893, *Tweedy 51* (US).

Greuter & Raus (1989) recently concluded that the name *Anemone narcissiflora* of Linnaeus (1759) is illegitimate being superfluous for the earlier *A. narcissifolia* ("uarcissifolia") L. (1753). The present authors have opted to use the orthography *A. narcissiflora* over the "nonsensical" *A. uarcissifolia* and are coauthoring a proposal to conserve its current and widespread usage with the full support of Greuter (pers. comm.).

Anemone quinquefolia L. var. **minima** (DC.) Frodin, *comb. & stat. nov.* BASIONYM: *Anemone minima* DC., *Syst. Nat.* 1:206. 1817. - HOLOTYPE: UNITED STATES. Sur les Allegani en Virginie, *Palisot de Beauvois s.n.* (G!) - *Anemonoides minima* (DC.) Holub, Folia Geobot. Phytotax. 12:428. 1977.

In a comprehensive study of the eastern North American *Anemone quinquefolia* complex, Frodin (1964) concluded that *A. minima* is a variety of *A. quinquefolia.* He proposed, but did not publish, the new combination. We have reached the same conclusion regarding the taxonomic status of this plant and with his permission and guidance, are publishing this name for him here. Frodin is to be attributed sole authorship of this combination [Article 46.4, Greuter *et al.* (1994)].

Anemone quinquefolia var. *minima* is distributed in North Carolina, Tennessee, Virginia, and West Virginia at elevations from 600 to 1000 m. The variety has relatively short achene bodies (2.5-3.0 mm long) and lateral leaflets of the radical leaves which are not lobed or are sometimes lobed only once while *A. quinquefolia* var. *quinquefolia*, the only other variety, has longer achene bodies (3.0-4.5 mm long) and lateral leaflets of the radical leaves which are frequently once lobed.

Additional Specimens Examined: UNITED STATES. Tennessee: Washington Co.: Johnson City, 7 Apr 1897, *Ashe 3017* (NCU). Virginia: Carroll Co.: beside a creek adjacent to Rt. 764 3.0 mi S of the Pulaski Co./Carroll Co. line and 5.2 mi S of Rt. 693, NE of Sylvatus, 18 Mar 1990, *Dutton & Ward 4618* (MARY); Craig Co.: base of wooded slope along tributary to Craig Creek, W of Craigs Creek, 6 mi NE of Newcastle, 14 Apr 1936, *Wherry & Adams 2684* (BH,CM,CU,GH,MO,PH); Montgomery Co.: S of Dry Run Road 10 mi NE of its junction with Virginia Hwy 8, 2 mi N of Blacksburg, 14 Apr 1936, *Wherry s.n.* (GH); Pittsylvania Co.: E bank of Pigg River, S of Virginia Hwy 40, SW of Toshes P.O., 15 Apr 1936, *Wherry s.n.* (GH); Smyth Co.: on the Iron Mountains, 27 May 1892, *Britton et al. s.n.* (NY).

ACKNOWLEDGMENTS

D.G. Frodin (K) is gratefully acknowledged for publishing his new combination here. R.L. Hartman (RM) provided invaluable assistance in locating material and providing information concerning Nelson's post publication selection of the types of his names. K. Johnson (ARIZ) searched for material in the ARIZ collection and E. Wood (GH) provided specimen information from the GH collection. K.N. Gandhi and J.L. Reveal provided critical comments and suggestions in their review of an earlier draft of this paper.

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Phytologia (August 1994) 77(2):89-95.

NORTH AMERICAN *SALIX* (SALICACEAE): TYPIFICATIONS AND NOTES

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ABSTRACT

Forty-eight names of North American *Salix* are typified. *Salix longifolia* var. *sericans* predates *S. exigua* var. *pedicellata*. Nomenclatural confusion in N.J. Andersson's major papers is discussed. Two author citations are corrected. One new combination is made: **S. bonplandiana var. laevigata**, *Salix gracilis* is confirmed to be a synonym of *S. petiolaris*. Chromosome counts are presented for *S. irrorata* ($n = 19$) and *S. serissima* ($n = 38$).

KEY WORDS: Salicaceae, *Salix*, North America

Salix amygdaloides Andersson, Proc. Amer. Acad. Arts 4:53. 1858. LECTOTYPE [designated here]: U.S.A. [South Dakota]: [probably Potter Co. (Maximilian 1843)], Missouri [River], 10 June [1833], [pistillate], *Maximilian s.n.* (BR!).

Salix arbusculoides Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1): 147. 1867. *Salix arbusculoides* Andersson - *puberula* Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):148. 1867. LECTOTYPE (designated here): CANADA. [Northwest Territories]: Prince Alberts Sound, 1852-1853, [pistillate (No. 3)], *Miertsching s.n.* (K!).

Salix arbusculoides Andersson - *glabra* Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):148. 1867. LECTOTYPE (designated here): CANADA. [Northwest Territories]: Rae River, [staminate (No. 5)], *Dr. Rae s.n.* (K!). = *Salix pulchra* Cham.

Salix arctica R. Br. *ex* Richardson *in* Franklin, *Narr. Journey Polar Sea* 752. March 1823, *non* Pall., *Fl. Ross.* 1(2):86. 1789. *Salix anglorum* Cham., Linnaea 6:541. 1831. *Salix arctica* Pall. *β Brownei* 2° *oblonga*

Andersson *in* DC., *Prodr.* 16(2):286. 1868. *Salix Brownei* (Andersson) Lundstr., Nova Acta Regiae Soc. Sci. Upsal., Ser. 3 14:37. 1877. *Salix Brownii* Bebb, Bot. Gaz. 14:115. 1889. LECTOTYPE (designated here): CANADA. [Northwest Territories]: Melville Island, 47 *Salix arctica* Parry's First Voyage 1819, *Capt. Sabine* (BM!). = *Salix arctica* Pall.

Salix arctica Pall. var. *petraea* (Andersson) Bebb *in* S. Watson, *Bot. California* 2:90. 1879. *Salix arctica* Pall. δ *petraea* Andersson *in* DC., *Prodr.* 16(2):287. 1868. *Salix petrophila* Rydb., Bull. New York Bot. Gard. 1:268. 1899. LECTOTYPE (designated here): CANADA. Rocky Mountains, 18 Aug 1858, [pistillate], *Bourgeau s.n.* (K! fragment and photo: A!).

N.J. Andersson's (1867, 1868) two major papers on willows have caused considerable nomenclatural confusion. He gave Latin names to numerous minor variants in more than one infraspecific rank using asterisks, dashes, Greek or Latin letters, Arabic numbers, and the terms formas, variat, modificationes, and rarely varietas or subspecies. In the 1868 paper he included "subspecies" under *Salix cordata* Muhl. and "varietates" under *S. nigra* Marshall. Greek letters were used in both these cases. Therefore, he could not have been following the Laws of Botanical Nomenclature of A. de Candolle (1868), and Ball's (Stafleu & Cowan 1976) interpretation cannot be accepted. Where Greek letters or other symbols are used without specifying a rank, the name has no priority until transferred to a definite rank. Thus, author citation for var. *petraea* is corrected above.

Salix argyrocarpa Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):107. 1867. *Salix argyrocarpa* Andersson Variat *sericea* Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):107. 1867. LECTOTYPE (designated here): U.S.A. New Hampshire: White Mountains, [pistillate], *Oakes s.n.* (S!).

Salix argyrocarpa Andersson Variat *glabrior* Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):107. 1867. LECTOTYPE [designated here]: U.S.A. New Hampshire: Mount Washington, 20-22 Aug 1858, [vegetative], *Eaton 12* (S!).

Salix barrattiana Hook., *Fl. Bor.-Amer.* 2:146. 1838. LECTOTYPE [designated here]: CANADA. "Rocky Mountains," [two older pistillate on left], *Drummond s.n.* (K!).

Salix bonplandiana Kunth var. **laevigata** (Bebb) Dorn, *comb. nov.* BASIONYM: *Salix laevigata* Bebb, Amer. Naturalist 8:202. 1874. LECTOTYPE [designated here]: U.S.A. California: Santa Cruz, [staminate], *Dr. Anderson s.n.* (Herb. Bebb 6164 [F!]).

Youngest leaves (except sometimes the 1st and 2nd on branchlet) mostly (4-)5 times or more as long as wide, narrowly elliptic to lanceolate; floriferous branchlets (sometimes leafless) 0-10(-12) mm long; Baja Calif. N., s. Ariz. & N.M., south to Guatemala. .... var. *bonplandiana*

Youngest leaves, especially those of floriferous branchlets, mostly 4(-5) times or less as long as wide, elliptic to obovate; floriferous branchlets mostly (4-)5-40 mm long; Utah, Nev., Calif., n. Ariz., & nw. México. .... var. *laevigata*

I thank George Argus for pointing out most of these differences.

Salix brachycarpa Nutt. var. *mexiae* C.R. Ball, Univ. Calif. Publ. Bot. 17:412. 1934. LECTOTYPE [designated here]: U.S.A. Alaska: McKinley National Park, snout of Muldrow Glacier, 23 July 1928, *Mexia 2131* (sheet 441340 [UC!]).

Salix cascadensis Cockerell, Muhlenbergia 3:9. 1907. BASIONYM: *Salix tenera* Andersson *in* DC., *Prodr.* 16(2):288. 1868. *non* A. Braun *ex* Unger, *Gen. Sp. Pl. Foss.* 418. 1850. LECTOTYPE [designated here]: CANADA-U.S.A. border, Summits of E side of Cascade Mountains, 49 degrees N., Aug 1860, [pistillate], *Lyall s.n.* (K! [fragment], S!).

Salix covillei Eastwood, Zoe 5:80. 1900. LECTOTYPE [designated here]: U.S.A. California: Fresno Co., Bubbs Creek, South Fork of King's River, "10" July 1899, [fruiting], *Eastwood s.n.* (CAS!). = *Salix drummondiana* Barratt *ex* Hook.

Salix cuneata Nutt., *N. Amer. Sylv.* 1:66. 1842. LECTOTYPE (designated here): U.S.A. [Washington or Oregon]: Oregon [Columbia] banks "at its confluence with the Wahlamet [Willamette]," [1835], [pistillate], *Nuttall s.n.* (BM!). = *Salix sitchensis* Sanson *ex* Bong.

Salix desertorum Richardson *in* Franklin, *Narr. Journey Polar Sea* 753. 1823. LECTOTYPE (designated here): CANADA. [Northwest Territories]: Fort Franklin on the Mackenzie R., [two lower left pistillate], *Dr. Richardson s.n.* (K!). = *Salix glauca* L.

Salix fulcrata Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):139. 1867. LECTOTYPE (designated here): N.W. America, Summer 1849, *Seemann 1789* (K!). = *Salix pulchra* Cham.

Salix fuscescens Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):97. 1867. LECTOTYPE (designated here): RUSSIA. Kamtschatka, *Beechey s.n.* (K!).

Salix geyeriana Andersson var. *meleina* J.K. Henry, *Fl. S. Brit. Columbia.* 98. 1915. LECTOTYPE (designated here): CANADA. British Columbia: Vancouver Is., Shawnigan, 9 May 1915, *Henry 1443* (US!). = *Salix geyeriana* Andersson var. *geyeriana.*

Salix glauca L. var. *villosa* Andersson, Proc. Amer. Acad. Arts 4:68. 1858. BASIONYM: *Salix villosa* D. Don *ex* Hook., *Fl. Bor.-Amer.* 2:144. 1838. *non* J. Forbes, *Salict. Woburn.* 183, pl. 92. 1829. nor Hoffm., *Observ. Bot.* 15. 1787. Author citation of the variety should be as above.

Salix hookeriana Barratt *ex* Hook., *Fl. Bor.-Amer.* 2:145. 1838. LECTOTYPE (designated here): "Grand Rapids of the Saskatchewan, Douglas" (an error), most likely "N.W. Coast of America, Scouler," [pistillate] (K!).

Salix hookeriana Barratt *ex* Hook. var. *laurifolia* J.K. Henry, *Fl. S. Brit. Columbia* 99. 1915. LECTOTYPE (designated here): CANADA. [British Columbia]: Vancouver, 8 April 1914, *Henry 1429* (US!). = *Salix hookeriana* Barratt *ex* Hooker var. *hookeriana*

Salix irrorata Andersson, Proc. Amer. Acad. Arts 4:57. 1858. LECTOTYPE (designated here): U.S.A. New Mexico: 1847, [pistillate], *Fendler 812* (S!); Isolectotypes: K!,US!.

Chromosome counts $n = 19$. Vouchers: U.S.A. Colorado: Larimer Co., Rist Canyon, *Dorn 5130, 5206, 5131, 5207* (CAN,NY,RM).

Salix lasiolepis Benth., *Pl. Hartw.* 335. 1857. LECTOTYPE (designated here): U.S.A. California: On the banks of the river Salinas and Carmel near Monterey, 1848, [pistillate], *Hartweg 1955* (K!).

Salix longifolia Muhl. var. *sericans* Nees *in* Wied-Neuw., *Reise Nord-America* 2:448. 1841. LECTOTYPE (designated here): U.S.A. [Nebraska]: 1 May 1833? [labeling somewhat ambiguous], [pistillate], *Maximilian s.n.* (BR!). = *Salix interior* Rowlee.

Maximilian was in or near the present Cass Co., Nebraska on 1 May 1833 (Maximilian 1843). Transects taken across eastern Wyoming, southwest South Dakota, western Nebraska, and northeast Colorado show very gradual intergrading of var. *sericans* and *Salix exigua* Nutt. Further study may show that var. *sericans* and *S. exigua* would be best treated as varieties of *S. fluviatilis* Nutt., which has priority at the species rank in this complex.

Salix longifolia Muhl. * *pedicellata* Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):55. 1867. LECTOTYPE (designated here): CANADA. "Saskatchewan River," 21 June 1858, [pistillate], *Bourgeau s.n.* (K!). = *Salix interior* Rowlee.

Salix lucida Muhl. var. *angustifolia* Andersson forma *pilosa* Andersson, Proc. Amer. Acad. Arts 4:54. 1858. *Salix arguta* Andersson - *erythrocoma* Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):33. 1867. LECTOTYPE (designated here): CANADA. [Manitoba]: Lake Winnipeg, collector unknown (K!). = *Salix lucida* Muhl.

Salix lucida Muhl. * *macrophylla* Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):32. 1867. LECTOTYPE (designated here): CANADA. [British Columbia]: Lower Frazer River, 49 N. Lat., 1859, [staminate], *Dr. Lyall s.n.* (S!); Isolectotypes: K!,S!. = *Salix lasiandra* Benth.

Salix maccalliana Rowlee, Bull. Torrey Bot. Club 34:158. 1907. LECTOTYPE (designated here): CANADA. Alberta: vicinity of Banff, road to Sun Dance cañon, 10 July 1899, *McCalla 2252a* (CU!).

Salix melanopsis Nutt., *N. Amer. Sylv.* 1:78. 1842. LECTOTYPE (designated here): U.S.A. [Idaho]: Lewis River [Snake River near Ft. Hall in 1834], [staminate], *Nuttall s.n.* (BM!).

Salix monica Bebb *in* S. Watson, *Bot. California* 2:90. 1879. LECTOTYPE (designated here): U.S.A. California: Mono Pass summit, June 1866, [pistillate], *Bolander s.n.* (sheet 7384 [F!]). = *Salix planifolia* Pursh.

Salix nigra Marshall var. *lindheimeri* C.K. Schneid., Bot. Gaz. 65:9. 1918. LECTOTYPE (designated here): U.S.A. Texas: "Comal Co.," New Braunfels, 1850, [pistillate], *Lindheimer 415* (GH!).

Salix nummularia Andersson *in* DC., *Prodr.* 16(2):298. 1868. LECTOTYPE (designated here): ASIA. Altai, "ad fl. Tschuja," *Bunge s.n.* (S!).

Salix obovata Pursh, *Fl. Amer. Sept.* 611. 1814. LECTOTYPE (designated here): CANADA. Labrador], collector unknown (PH!). = *Salix vestita* Pursh.

Salix pedicellaris Pursh, *Fl. Amer. Sept.* 611. 1814. HOLOTYPE: U.S.A. "New York: Catskill mountains," Garden: from G. Anderson (K!). Schneider (1920) thought that there was no type specimen.

Salix pentandra L. *β caudata* Nutt., *N. Amer. Sylv.* 1:61. 1842. LECTOTYPE (designated here): U.S.A. Rocky Mts. "toward their western slope," [1834], [pistillate], *Nuttall s.n.* (BM!).

Salix petiolaris Sm., Trans. Linn. Soc. London 6:122. 1802. HOLOTYPE: [Reputedly BRITAIN, actually AMERICA], Mr. Crowe's garden No. 8, 19 Apr 1800, *Dickson s.n.* (LINN photocopy: RM!). Synonym: *Salix gracilis* Andersson.

Salix phlebophylla Andersson, Proc. Amer. Acad. Arts 4:72. 1858. LECTOTYPE (designated here): N.W. America, *Seemann s.n.* (S!); Isolectotype: K).

Salix buxifolia Trevir. *ex* Trautv., Nouv. Mem. Soc. Imp. Naturalistes Moscou 2:301. 1832. *non* Schleich. *ex* Gaudin, *Fl. Helv.* 6:270. 1830.

Salix pyrifolia Andersson, Köngl. Svenska Vetenskapsakad. Handl. 6(1):162. 1867. LECTOTYPE (designated here): CANADA. Saskatchewan: Fort Pitt, 1859, [pistillate], *Bourgeau s.n.* (S!).

Salix serissima L.H. Bailey) Fernald, Rhodora 6:6. 1903. LECTOTYPE (Ball 1921): U.S.A. Minnesota: Mud River, Vermillion Lake, *Bailey 357* (F!).

Chromosome count $n = 38$. Voucher: U.S.A. Wyoming: Albany Co., S. Br. Crow Ck., *Dorn 5212* (CAN,MO,NY,RM).

Salix sessilifolia Nutt., *N. Amer. Sylv.* 1:68. 1842. LECTOTYPE (designated here): U.S.A. [Washington or Oregon]: Columbia banks "at the confluence of the Wahlamet" [Willamette in 1835], [pistillate], *Nuttall s.n.* (BM!); Isolectotype: K!.

Salix setchelliana C.R. Ball, Univ. Calif. Publ. Bot. 17:410. 1934. LECTOTYPE (designated here): U.S.A. Alaska: Mt. McKinley National Park, snout of Muldrow Glacier, about 31 Aug 1932, *Kaye 1* (sheet 504077 [UC!]) Isolectotypes: A!,CAN!,RM!.

Salix tracyi C.R. Ball, Univ. Calif. Publ. Bot. 17:403. 1934. LECTOTYPE (designated here): U.S.A. California: Del Norte Co., Near Smith River below Gasquets, 10 May 1931, *Parks & Tracy 0934* (sheet 481401, UC!). = *Salix lasiolepis* Benth.

Salix tristis Aiton var. *microphylla* Andersson, Proc. Amer. Acad. Arts 4:67. 1858. LECTOTYPE (designated here): U.S.A. *Ex* Herb. S.T. OLNEY. *Salix tristis* Rhode Island Asa Gray misit 1848, [most mature pistillate on sheet] (S!).

Salix vestita Pursh, *Fl. Amer. Sept.* 610. 1814. LECTOTYPE (designated here): CANADA. Labrador. Societ. Unit. Frat. [Moravian missionaries, prob. in 1765] (BM!).

ACKNOWLEDGMENTS

I thank Ronald Hartman, curator of RM, for allowing use of those facilities; Greg Brown, University of Wyoming, for allowing use of his lab; Ernie Nelson (RM) for assisting with loans; the curators of herbaria who loaned specimens or searched for type material: A, BM, BR, C, CAS, CU, F, GH, K, LINN, LIV, MO, NY, OXF, PH, S, UC, UPS, US, and W; and Charles Jarvis and F.R. Barrie (LINN) for examining the type of *Salix petiolaris*.

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Phytologia (August 1994) 77(2):96-98.

SOLANUM ARAHUAYUM (SECT. *PETOTA*), NOVA SPECIE PERUVIANA

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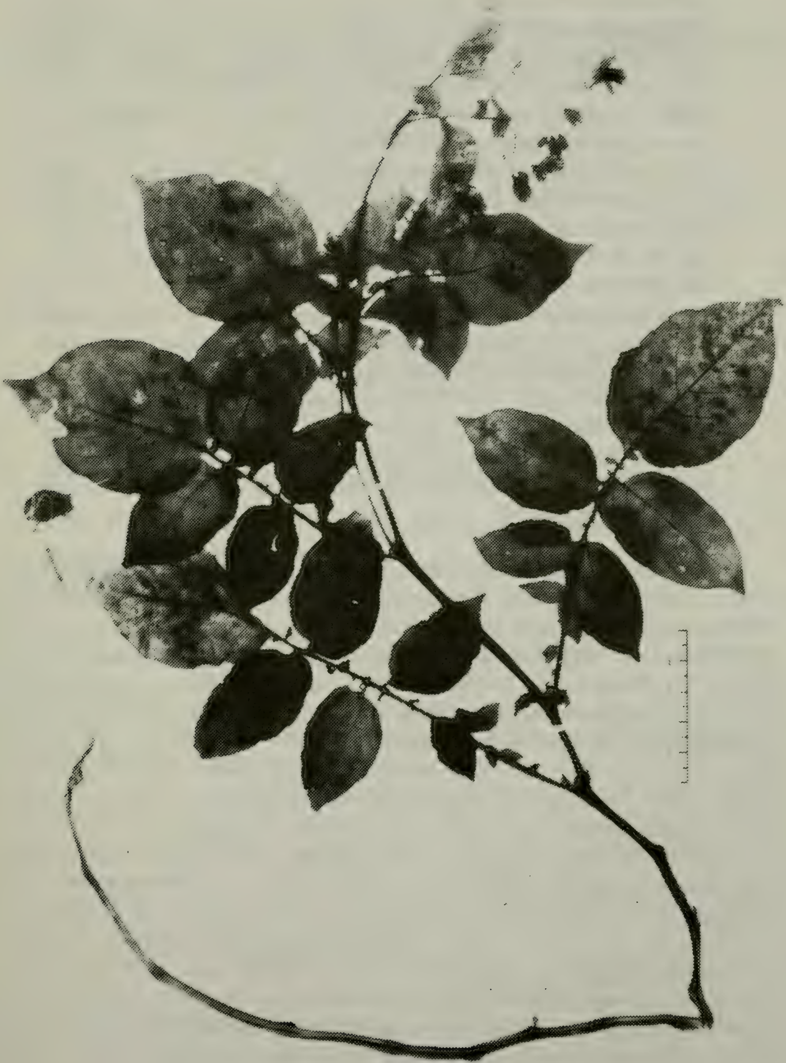
ABSTRACT

Solanum arahuayum is newly described from Perú.

KEY WORDS: Solanaceae, *Solanum*, new species

Solanum arahuayum Ochoa, *spec. nov.* TYPUS: PERU. Dept. Lima, prov. Canta, Cruz Pallashcushca, 3100-3200 m altitudine, ca. Arahuay, Inter saxum, Martius 28, 1972; *Graciela Vilcapoma Segovia 208* (HOLOTYPUS: Herbarium Ochoanum; Isotypus: MOL,USM). Paratypi: PERU. Dept. Lima, prov. Canta, inter Antura et Huarhuaymarca, 2600-3000 m supra mare, In terae praeruptis xerophyticas, in solis siccis, duris et saxosis occurit, Aprilis 6, 1979; *C. Ochoa 13257* (MOL,Herbarium Ochoanum,USM).

Herbaceum, tuberiferum. Plantae simplices vel ramosae, 50-60(-70) cm altae. Caules cylindrici, exalati, laete virides, sparsim pilosi; pili simplici, pluricellulares 1.5-2.0 mm longis, cum pilis brevibus, paucis, glandular-tetralobulatis intermixti. Internodia (2.5-)5.0-6.0(-14.0) cm longa. Stolones 1 m vel plus longi, tubera alba, ovalia, oval-pyriformia vel complanata, 2-4 cm longa, 1.0-1.8 cm crassa. Folia imparipinnata 15.0-18.0(-25.0) × 10.0-11.0(-16.0) cm laete viridia, supra sparse pilosa, subtus palidiora pilis brevibus instructa; 3-4(-5) juga et 3-6(-8) paribus vel plus foliolis interjectis ornata. Raquis et petioli sparse pilosi, pilis longis simplicis intermixti cum pilis brevibus glandular tetralobulatis. Foliolum terminal lateralibus mayus vel valde magnum 5.0-7.0 × 3.5-5.0 cm late elliptico lanceolatum, apice acutum vel breviter acuminatum, basi rotundatum, vel oblique rotundatum, breviter cuneatum et anguste decurrens. Foliola lateralia primi jugis 3.2-5.5 × 2.0-3.0 cm ad basim



Solanum arahuayum Ochoa
Graciela Vilcapoma Segovia 208 (holotype).

gradatim minora, apice acuto, basi rotundata vel oblique rotundata, sessilia atque latere basiscopico anguste decurrentia. Foliola interjecta anguste elliptico-lanceolata vel triangulariter-lanceolata, basi membranacea vel decurrentia, magnitudina varibilia 2-12 mm longa. Foliola omnia marginibus fere ondulata. Foliola pseudostipulacea anguste falcata usque ad auriculata 10-12 × 5-6 mm. Inflorescentia cymosa vel cymoso-paniculata 10-12(-20) flora. Flores pulchrae, pedunculi 3-4 cm vel longi, tamquam pedicelli pilis simplicis et pilis glanduliferis tetralobulatis induta et in $\frac{2}{3}$ vel prope calicem articulati. Calyx 10-12 mm longus, pilosus, laete viridis, lobi anguste elliptico lanceolati, late membranacei, in acumina longa subspathulata 5-7 mm longa producti. Corolla rotata, magna 3.5-4.0 cm diam., lilacina, stella virideflava, columna antherarum asymmetrica, cylindrico-conica, filamenta 1.0-1.5 mm longa, pauci pilis inter-filamenta, antherae lanceolatae 6.0-6.5 mm longae, aurantiacae, basi cordatae. Stylus 12-14 mm longus, 5 mm exsertus, basi usque ad $\frac{1}{2}$ dense papillosus, stigma captitatum, parvum, ovario globosum. Numerus cromosomatum: $2n=24$. Ad seriem *Tuberosa* pertinet.

Affinitates: Caulibus cylindricis, exalatis, corolla forma, magnitudine et colore, calyce forma, magnitudine et pubescentia *Solanum wittmackii* Bitt. affine, sed *S. arahuayum*, cujus pilositas minus densa, pilis simplices breves, pili glanduliferi tetralobulati plus sparsi, forma et dissectio foliorum bene distincta. Vice versa foliola breviora usque ad 4-juga et foliolum terminale valde magnum *S. medians* proxima videtur. Denique *S. arahuayum* verisimiliter ex hybridation *S. medians* et *S. wittmackii* orta.

Phytologia (August 1994) 77(2):99-101.

THE REDUCTION OF *PLATYAECHMEA* UNDER *HOPLOPHYTUM*, AND A NEW NAME IN *TILLANDSIA* (BROMELIACEAE)

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ABSTRACT

The recently proposed genus *Platyaechmea* (Baker) L.B. Smith & W.J. Kress (1990) proves to be a superfluous name for *Hoplophytum* Beer (1854), and is therefore reduced to synonymy. **Tillandsia azuayensis** J.R. Grant is proposed as a new name to replace *Vriesea wuelfinghoffii* Rauh (1991), not *Tillandsia wuelfinghoffii* R. Ehlers (1990).

KEY WORDS: taxonomy, *Platyaechmea*, *Hoplophytum*, *Tillandsia*, *Aechmea*, Bromeliaceae

Platyaechmea vs. *Hoplophytum*

Smith & Kress (1989) attempted to elevate *Aechmea* subg. *Platyaechmea* Baker to the generic rank, but failed to include the citation of its basionym. Both *Platyaechmea* (Baker) Smith & Kress (1989) as well as the 28 combinations proposed were therefore invalid (Art. 32, Greuter *et al.* 1988). Smith & Kress (1990) corrected the error by providing the complete citation of the basionym, and proposed the same 28 combinations. However, they overlooked the predating generic name *Hoplophytum* Beer (1854). *Platyaechmea* (Baker) L.B. Smith & W.J. Kress (1990) is superfluous as it includes the type of *Hoplophytum*, *Aechmea distichantha* Lemaire.

Although there is no problem with *Hoplophytum* predating *Platyaechmea*, I am hesitant to propose new combinations in *Hoplophytum* for the names applied to *Platyaechmea* as I question whether the genus has merit. Even if it does warrant generic status, all the species placed in the group by Smith & Kress (1990) may not have been correctly positioned. Therefore, when the genera of the *Aechmea* complex are sorted out, the name *Hoplophytum* must be used instead of *Platyaechmea*.

Hoplophytum Beer, Flora 37:348. 1854. TYPE SPECIES: *Billbergia rhodocyaneà* Lemaire, *Fl. Serres* 3: pl. 207. 1847, [= *Billbergia fasciata* Lindley, Bot. Reg. 13: pl. 1130. 1828. *Hohenbergia fasciata* (Lindley) J.H. Schultes *in* Roemer & J.A. Schultes, *Syst.* 7(2):1253. 1830. *Aechmea fasciata* (Lindley) Baker, J. Bot. London 17:231. 1879. *Hoplophytum fasciatum* (Lindley) Beer, *Bromel.* 129. 1856. *Platyaechmea fasciata* (Lindley) L.B. Smith & W.J. Kress, Phytologia 69(4):273. 1990].

= *Disquamia* Lemaire, Jard. Fleur. 3: planche 269. 1853, *nom. nud. et pro syn.* In synonymy under *Aechmea distichantha* Lemaire, Jard. Fleur. 3: pl. 269. 1853.

= *Platyaechmea* (Baker) L.B. Smith & W.J. Kress, Phytologia 69(4):272. 1990, *syn. nov.* TYPE SPECIES: *Aechmea distichantha* Lemaire, Jard. Fleur. 3: pl. 269. 1853. *Platyaechmea distichantha* (Lemaire) L.B. Smith & W.J. Kress, Phytologia 69(4):272. 1990.

Tillandsia

When I previously transferred a number of species from *Vriesea* to *Tillandsia* (Grant 1993), I did not include *Vriesea wuelfinghoffii* Rauh because I was uncertain of its correct generic position. After additional studies, I have determined that it should be placed in *Tillandsia.*

Tillandsia azuayensis J.R. Grant, *nom. nov.* BASIONYM: *Vriesea wuelfinghoffii* Rauh, Abh. Akad. Wiss. Lit. Mainz, Math.-Naturwiss. Klasse, Trop. Subtrop. Pflanzenwelt 79:25. 1991, not *Tillandsia wuelfinghoffii* R. Ehlers, J. Bromeliad Soc. 40(5):201. 1990. TYPE: ECUADOR. Azuay: Steep cliffs near Cuenca, *Wuelfinghoff s.n.* (HOLOTYPE: HEID).

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Phytologia (August 1994) 77(2):102-140.

VEGETATION AND FLORA OF THE MOUNTAIN PIMA VILLAGE OF NABOGAME, CHIHUAHUA, MEXICO

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ABSTRACT

The Mountain Pima village of Nabogame lies at an elevation of 1800 m in the Sierra Madre Occidental, 250 km W of Ciudad Chihuahua, 18 km NW of Yepachi and 10 km E of the Sonoran frontier. The village is in a rainshadow which causes a local abundance of xerophytic vegetation. A list is provided of 601 species of vascular plants collected from approximately 40 km^2 in the vicinity of Nabogame.

RESUMEN

La comunidad Pima de Nabogame se halla en una altitura de 1800 m en la Sierra Madre Occidental, 250 km oeste de la Ciudad Chihuahua, 18 km al noroeste de Yepachi y 10 km al este de los límites con Sonora. La comunidad está ubicada en un sombre orográfica que causa una abundancia local de vegetación xerofítica. Se recolectaron 601 especies de plantas vasculares de la vicinidad de Nabogame.

KEY WORDS: floristics, vegetation, México, Chihuahua

The Sierra Madre Occidental of northwestern México remains botanically underexplored. Brand (1937), Gentry (1942), LeSueur (1945), White (1948), and Maysilles (1959) provided floristic information on portions of the region, but no flora covers the area. None of these authors concentrated on the portion of the area inhabited by the Mountain Pima people. The present study is an attempt to contribute to floristic knowledge of the region through intensive collecting in a small portion of it.

The Mountain Pima village of Nabogame, Chihuahua, México, lies in the Municipio of Temósachic at an elevation of 1800 m in the Sierra Madre Occidental at 28°30′N, 108°30′W. The town should not be confused with the larger Tepehuan community of the same name in southern Chihuahua. The site is approximately 250 km due west of Ciudad Chihuahua, 18 km northwest of Yepachi and 10 km east of the frontier with the state of Sonora. The total population is approximately 75. Information on the use of native plants and fungi by the people of Yepachi and Nabogame as sources of food, fiber, medicine, and holiday decorations is given by Pennington (1973), Laferrière (1990b; 1991a,d; 1992a), Laferrière & Gilbertson (1992), Laferrière & Van Asdall (1991, 1992), and Laferrière *et al.* (1991a,b).

The Nabogame valley ranges in altitude from 1600 m in the south at the confluence of the Nabogame Arroyo with the Río Yepachi to 2100 m at the summit of the mountain to the northeast of the town. The east side of the valley is formed of a highly siliceous rhyolite, while the west side is of a purplish-red shale. There are also numerous rocky outcroppings in the vicinity, often forming steep precipices. The entire area is cut by numerous small canyons and arroyos. There are no deep barrancas in the immediate vicinity, such as those found south of Yepachi in the drainage basin of the Río Mayo.

The region included in the floristic survey covers the drainage basin of the creek running through the center of Nabogame (called "Arroyo de Nabogame"), plus the neighboring drainage basin locally referred to as "La Mesa" (Figure 1). This basin to the east of the main drainage basin was included since one house socially and politically considered part of Nabogame lies to the east of the divide, and because there has been less disturbance in the area. The eastern drainage has been subjected to less intensive agricultural exploitation and no commercial logging. The creeks of both drainage basins are tributaries of the Río Yepachi. This is itself a tributary of the Río Mulatos, which in turn drains into the Río Papigóchic and the Río Yaqui. The portion of the river between the mouths of the two creeks was also included in the survey, as was the maple grove on the south side of the river near the mouth of the Arroyo de Nabogame. Estimated total area of the survey was 40 km^2.

Precipitation in the Sierra Madre Occidental is bimodal, with two rainy seasons and two dry seasons (Wallén 1955). Average annual precipitation in Yécora, Sonora, 40 km west of Nabogame, is reported at 1071 mm per annum (Hastings 1964). No data is available for Nabogame or Yepachi, but both appear somewhat moister than Yécora. Most of the rain occurs in the form of thunder showers which approach from the southeast in late summer (Hastings 1964). Nabogame is in a strong rainshadow even with respect to Yepachi 18 km to the southeast. Moist pine forest is the dominant natural vegetation type in Yepachi, but this covers only a small percentage of the land in Nabogame. The

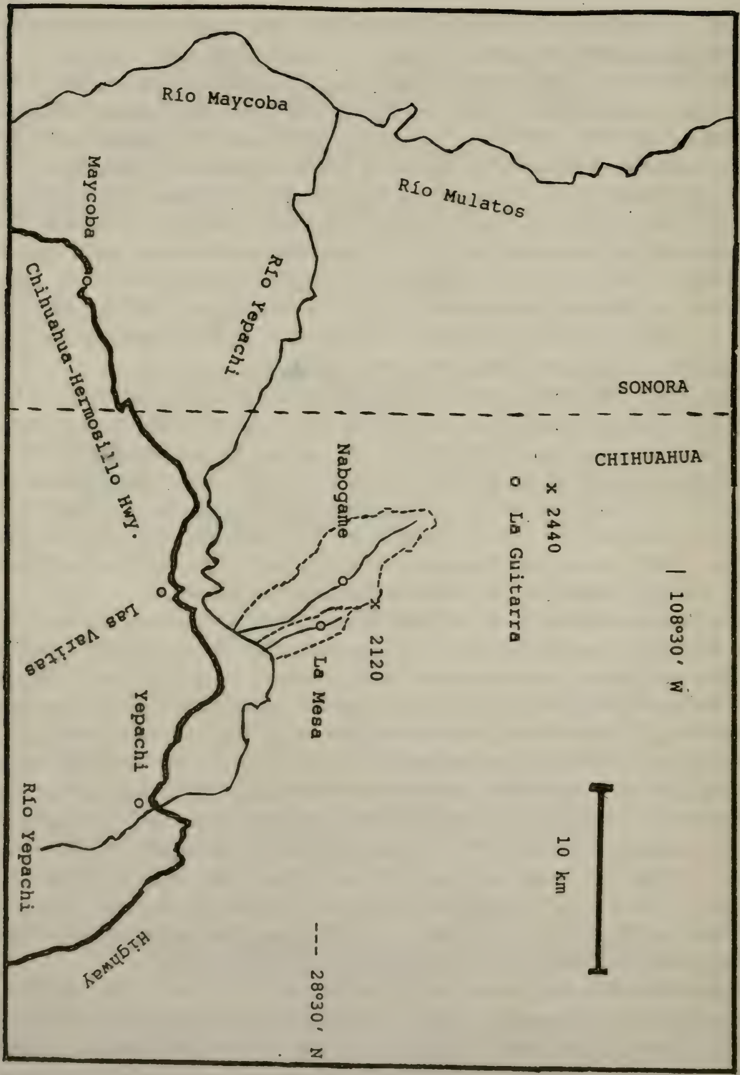

Figure 1. Map showing Nabogame and La Mesa drainage basins included in floristic survey.

name "Nabogame," *i.e.*, "place of the prickly-pears," reflects the abundance of xerophytic vegetation at this site. Nabogame is nevertheless moister than other communities farther west and is by no means a desert.

The seasonality of rainfall has a significant impact on vegetation and stream flow. Fallow fields depleted of vegetation by grazing during the spring dry season become covered with a thick stand of herbs two meters or more tall by the end of August. Creeks in the town dry out completely during the May-June dry season, then become raging torrents during July and August thunder showers. The desiccation of the annual dry season combined with the scouring effect of the summer floodwaters prevent the formation of swamps or marshes in the valley.

During the latter half of my fieldwork period, beginning in August 1987, the Mountain Pima area experienced the worst drought in the memory of the local people (Laferrière 1992a). Most of the North American continent experienced the same phenomenon, caused by warm currents in the tropical Pacific Ocean, commonly called "El Niño" (Trenberth *et al.*, 1988). The drought adversely affected many of the local plant populations. Indirect effects of the drought, especially increased grazing pressure, were as devastating on the local plant community as the direct effects.

Although the predominant natural vegetation of Nabogame is pine/oak forest (Rzedowski 1986), this has been greatly modified by human utilization. The inhabitants of the town impact on the landscape in several ways: livestock grazing, plowing of fields for agricultural use, and direct utilization of wild plants for food, fiber, medicine, construction materials, and firewood (Laferrière & Van Asdall 1992). Grazing intensity varies seasonally due to the local habit of allowing the livestock into the center of town during the winter but keeping them in the forest from May to November (Laferrière & Van Asdall 1992). This results in a great abundance of herbaceous vegetation inside the town during the summer rainy season. This luxurious growth is nearly completely consumed by the livestock by spring. Grazing and direct human utilization of plant resources has severely depleted several useful species, according to many of the local people. Economic species they describe as having been more abundant in the past include *Dasylirion wheeleri*, *Nolina microcarpa*, *Yucca madrensis*, and *Prionosciadium townsendii.*

The valley can be subdivided into various vegetation zones according to use, soil, slope, aspect, and availability of water. The following habitats are present in Nabogame, characterized by their dominant species:

A. FORESTS

1. Oak forest: *Quercus chihuahuensis*, *Q. viminea*, *Q. hypoleuca*, *Arbutus xalapensis*. This constitutes the most widespread vegetation zone, covering large sections of hillside.
2. Moist pine forest: *Pinus engelmannii*, *P. chihuahuana*, *Quercus*

chihuahuensis, *Q. viminea*. Moist pine forest generally occurs in more protected, sheltered areas than oak woodland, although the two do intergrade considerably.

3. Dry pine forest: *Pinus lumholtzii*, *Quercus chihuahuensis*, *Juniperus deppeana*, *Arbutus xalapensis*. The soil in certain areas is poorer and more porous than in others, resulting in slightly more xerophytic vegetation. The trees in this area are shorter than in the moist pine forest, the herbaceous vegetation more scanty, and the general aspect more open.
4. Cypress forest: *Cupressus lusitanica*, *Pinus* spp., *Quercus* spp., *Prunus gentryi*, *Arbutus xalapensis*, *Fraxinus* spp. Along the intermittent creeks where the water table is rather shallow, there occurs a very moist community dominated primarily by tall trees. Many of these areas are steep-walled canyons, with such shrubs as *Berberis pimana*, *Holodiscus dumosus*, *Rhus trilobata*, and *Forestiera neomexicana*.
5. Maple forest: *Acer grandidentatum*, *Cupressus lusitanica*. Along the banks of the Río Yepachi, there are two small stands dominated by these two tree species. Though of small extent, these groves are important floristically since many mesic, sun-intolerant herbs are present only in these groves.

B. OPEN BRUSH

1. Manzanita thickets: *Arctostaphylos pungens*, *Quercus chuhuichupensis*, *Juniperus durangensis*. This community dominated by shrubs and small trees is found in areas of extremely poor, porous soil. This type grades into the dry pine forest.
2. Steep cliffs and near-cliffs: *Dasylirion wheeleri*, *Agave shrevei*, *Opuntia* spp., *Eysenhardtia orthocarpa*. These open rock-faces are largely immune to grazing pressure.

C. AQUATIC

1. Rivers: *Ranunculus circinatus*, *Potamogeton* spp. In the waters of the Río Yepachi are found a few submerged and emergent species.
2. Sunlit springs: *Eryngium longifolium*, *Lobelia cardinalis*. Most of the sunlit springs are very heavily grazed, but approximately 1 km north of the town there is a permanent spring on a slope too steep for even the goats. This spring was flowing even during the drought of 1988.
3. Shaded springs: *Quercus* spp., *Prunus gentryi*, *Cupressus lusitanica*.
4. Sun-lit creekbanks: *Baccharis salicifolia*, *Polygonum* spp.

D. DISTURBED AREAS

1. Cultivated fields: *Amaranthus hybridus*, *Cosmos parviflorus*, *Bidens aurea*, *Ipomoea* spp.
2. Fallow fields, ungrazed in summer: *Cosmos parviflorus*, *Bidens aurea*, etc.

3. Cleared but unplowed fields: *Hymenocallis pimana*, *Cosmos parviflorus*, *Bidens aurea*, *Opuntia* spp. Within the perimeter fence protecting the center of town from grazing livestock, there are areas too steep or rocky for planting. These are therefore left permanently as pasture, grazed in the winter but not the summer. Most of the annual species found in the fallowed fields may also be found here, in addition to perennial species such as *H. pimana*.
4. Permanently grazed pasture: various grasses and forbs. In the forest beyond the perimeter fence there are several permanent pastures devoid of trees and subject to year-round grazing. Some of these represent fields formerly cultivated but now abandoned due to erosion.

I collected specimens of 601 plant species from this area between October 1986 and November 1988. The largest families represented were the Asteraceae (118 species), Poaceae (65), and Fabaceae (55). The number of species collected compares favorably with those of other local floras from northwestern México and the southwestern United States. Such local floras contain an average of approximately 400 species (Bowers 1981, 1982; McLaughlin 1986). White (1948) listed 1200 species from the Río Bavispe, an area close to Nabogame and at comparable elevation but approximately 100 times as large. Given these comparisons to other studies, I feel confident that the list represents the vast majority of the plant species present in Nabogame during the study period. I cannot, however, estimate the number of species missed because of the drought.

Nabogame is the type locale for nine recently described plant and fungal taxa. These are *Prunus gentryi* forma *flavipulpa* (Laferrière 1989), *Hymenocallis pimana* (Laferrière 1990a), *Berberis pimana* (Laferrière & Marroquín 1990), *Laennecia pimana* (Nesom & Laferrière 1990), *Pectis pimana* (Laferrière & Keil 1991), *Wedelia pimana* (Turner 1992), *Arabis microsperma* (Rollins 1993), *Albatrellus mexicanus* Laferr. & Gilbn. (Laferrière & Gilbertson 1990a), and *Polyporus tenuiparies* Laferr. & Gilbn. (Laferrière & Gilbertson 1990b).

ANNOTATED LIST OF PLANTS COLLECTED IN NABOGAME, CHIHUAHUA, MEXICO.

Numbers after the names indicate the author's collection numbers. Nearly all the following species are represented by vouchers at ARIZ. For those taxa not represented by vouchers at ARIZ, location of voucher is given after the collection number. Secondary centers for duplicate deposition are ANSM, CHAPA, MEXU, SD, and TEX. Smaller numbers of specimens have been sent to A, ASU, CAS, COL, COLO, DAV, DES, ENCB, F, FTG, GH, ID, K, KIRI, KU, MO, MONT, NCSC, NMC, NY, OBI, RM, SBBG, TAES, UC, UCR, UNL, UNM, US, and VDB, and to Mesa State College, P.O. Box 2647, Grand Junction, Colorado 81502.

For many plants, the local common names are given. An "S" indicates the name used by the Pima when they are speaking Spanish; some of these are non-standard Spanish, and a few are actually of Tarahumara etymology. A "P" indicates a Pima name. The orthography used in Pima names is the same as for Spanish, except that "b," "v," "h" and "sh" have the same meanings as in English. A "+" indicates an open front vowel, an apostrophe indicates a glottal stop, and a "y" indicates palatization of the preceding consonant. Final vowels in Mountain Pima can fluctuate, especially between "i" and "e," or be dropped entirely.

LYCOPODIOPHYTA

Selaginellaceae

Selaginella arizonica Maxon. Barba de piedra (S); hot+nvara (P) [names also applied to all terrestrial lichens and bryophytes]. Cliff faces. #358.

Selaginella novoleonensis Hieron. Flor de piedra (S); bautama hioshgama (P). Cliff faces. #1241.

Selaginella rupincola Underw. Barba de piedra (S). Cliff faces, oak, pine, and cypress forests. #1307.

Selaginella wrightii Hieron. Barba de piedra (S). Sunlit creekbanks. #1371.

EQUISETOPHYTA

Equisetaceae

Equisetum hyemale var. *affine* (Engelm.) A.A. Eat. Cola de caballo (S); kaba hira (P). Streambanks. #1271.

POLYPODIOPHYTA

Adiantaceae

Argyrochosma limitanea (Maxon) Wind. var. *limitanea*. Cypress forest. #1239.

Bommeria hispida (Mett.) Underw. Oak forest. #379.

Bommeria pedata (Sw.) Fourn. Oak forest. #1649.

Cheilanthes alabamensis (Buckl.) Kunze. Cypress forest. #1293.

Cheilanthes bonariensis (Willd.) Proctor. Oak forest. #378.

Cheilanthes cuneata Link. Carnehual (S) [name applied to all ferns by some people but restricted to this species by others]. Cypress forest. #1001.

Cheilanthes lendigera (Cav.) Swartz. Oak forest. #377.

Cheilanthes sinuata (Sw.) Domin. Oak, cypress, and maple forests. #386.

Cheilanthes wrightii Hook. Fallow fields. #1289.

Pellaea cordifolia (Sessé & Moç.) A.R. Smith. Cliff-faces. #726.

Pellaea ternifolia (Cav.) Link. var. *ternifolia*. Oak forest. #1489.

Aspleniaceae

Asplenium palmeri Maxon. Cypress forest. #362.

Thelypteris puberula (Baker) Morton. Cypress forest. #1108.

Dennstaedtiaceae

Pteridium aquilinum var. *pubescens* Underw. Fields. #1105.

Ophioglossaceae

Ophioglossum engelmannii Prantl. Open oak forests. #1553.

Polypodiaceae

Elaphoglossum pilosum (H.B.K.) Moore. Maple forest. #1399.

Phlebodium areolatum (Willd.) J. Smith. Oak forest. #704.

Polypodium thysanolepis Klotz. var. *thysanolepis*. Pine and oak forests. #356, 380.

PINOPHYTA

Cupressaceae

Cupressus lusitanica Mill. Sabino (S); ga'a (P). Cited as *C. arizonica* E. Greene by Laferrière (1992a), Laferrière & Gilbertson (1992) and Laferrière *et al.* (1991a). Cypress and maple forests. #333.

Juniperus deppeana var. *robusta* Mart. Táscate (S); ban ga'a (P). Pine and oak forests. #398.

Juniperus durangensis Mart. Táscate negro (S); sho'olyi ga'a or tuk ga'a (P). Cliff faces and manzanita thickets. #1426.

Juniperus flaccida Schlecht. var. *flaccida*. Sabino colorado (S); wam ga'a (P). Oak forests. #1379.

Pinaceae

Pinus arizonica Engelm. Pino blanco (S); huko (P). Pine and cypress forests. #349.

Pinus chihuahuana Engelm. Pino colorado (S). Oak and pine forests. #336.

Pinus engelmannii Carr. Pino blanco (S); tua huko (P). Pine and cypress forests. #331.

Pinus lumholtzii B.L. Rob. & Fernald. Pino finito (S); bi'igama huko (P). Pine and cypress forests. #479.

ANTHOPHYTA
DICOTYLEDONAE
Acanthaceae

Dyschoriste decumbens (A. Gray) Kuntze. Cypress forests. #1227.

Elytraria imbricata (Vahl.) Pers. Cordoncillo (S). Oak and pine forests. #324.

Stenandrium pilosulum (S.F. Blake) T.F. Daniel. Fields. #439.

Aceraceae

Acer grandidentatum Nutt. Haya (S); sojara (P). Maple forests. #1491.

Amaranthaceae

Alternanthera caracasana H.B.K. Fields. #594.

Amaranthus hybridus L. Fields. Quelite de mayo or quelite de agua (S); tu'ya (P). Very common weed in cultivated fields. #546.

Gomphrena nitida Rothr. Fields. #315.

Guillerminea densa Willd. Contrahierba (S); v+v+gi hioktoktama (P). Creekbanks. #1041.

Iresine heterophylla Standl. Creekbanks and cypress forests. #1907.

Anacardiaceae

Rhus allophylloides Standl. Cypress forests. #2260.

Rhus aromatica Ait. Lima (S); divi'uka (P). Oak, pine, and cypress forests. #403.

Toxicodendron radicans var. *divaricatum* (E. Greene) Gillis. Hiedra (S); tumuraga (P). Forests. #491

Apiaceae

Donnelsmithia juncea (H.B.K.) Mathias & Const. Oak and pine forests. #1789.

Eryngium heterophyllum Engelm. Hierba del sapo (S); koko hoyi (P). Fields. #852.

Eryngium lemmonii Coult. & Rose. Creekbanks in cypress forests. #1767.

Eryngium longifolium Cav. Sunlit springs. #1568.

Hydrocotyle verticillata var. *triradiata* (A. Rich.) Fernald. Creekbanks. #513.

Lilaeopsis schaffneriana (Schl.) Coult. & Rose. Emergent from mudflats along riverbank. #2208.

Prionosciadium madrense S. Wats. Saraviqui amargo (S); komichi (P). Fields and oak and pine forests. #1155.

Prionosciadium townsendii Rose. Saraviqui (S); tapy+k+lyi (P). Cypress forests and sunlit springs. #1504.

Apocynaceae

Macrosiphonia hypoleuca (Benth.) Muell. Oak forests. #1519.

Mandevilla foliosa (Muell.-Arg.) Hemsl. Fields and oak, pine and cypress forests. #1459.

Aquifoliaceae

Ilex tolucana Hemsl. Cypress forests. #948.

Araliaceae

Aralia humilis Cav. Oak and cypress forests. #322.

Asclepiadaceae

Asclepias angustifolia Schweig. Fields, forests, and creekbanks. #470.

Asclepias elata Benth. Fields. #662.

Asclepias fourneri Woods. Fields. #1936 (A).

Asclepias glaucescens H.B.K. Fields. #1684.

Asclepias jaliscana B.L. Rob. Oak forests. #1528.

Asclepias linaria Cav. Fields and oak forests. #509.

Asclepias ovata Mart. & Gal. Fields and forests. #1524.

Asclepias quinquedentata A. Gray. Fields. #981 (MO).

Gonolobus sp. Cypress forests. #2301 (MO).

Pherotrichis balbisii A. Gray. Mortal (S). Oak forests. #500.

Asteraceae

Acourtia dieringeri Cabrera. Pipichau (S); shamundam (P). Oak forests. #1085.

Acourtia patens (A. Gray) Reveal & R.M. King. Pine and oak forests. #1280.

Acourtia thurberi (A. Gray) R.M. King & H. Rob. Matariki (S); kokshama (P). Fields and oak forests. #317.

Ageratina hyssopina (A. Gray) R.M. King & H. Rob. Oak forests. #1918 (TEX).

Ageratina paupercula (A. Gray) R.M. King & H. Rob. Cypress forests. #1390.

Ageratina palmeri (A. Gray) Gage. Oak and maple forests. #2118.

Ageratina rothrockii (A. Gray) R.M. King & H. Rob. Cypress forests. #2200.

Ageratina stricta (A. Gray) R.M. King & H. Rob. Pine and cypress forests. #1311.

Ageratum corymbosum Pers. forma *corymbosum*. Fields and oak forests. #728.

Ageratum corymbosum forma *lactiflorum* M.F. Johnson. Cliff faces and oak forests. #979.

Alloispermum palmeri var. *lancifolium* (Urbatsch & B.L. Turner) Fernández & Urbatsch. Oak forests. #1548.

Ambrosia psilostachya DC. Estafiete (S); musha (P). Fields and creekbanks. #1933.

Artemisia ludoviciana subsp. *sulcata* (Rydb.) Keck. Forests. #1259.

Aster potosinus A. Gray. Fields and cypress forests. #1941.

Aster spinosus Benth. Creekbanks. #1214.

Aster subulatus var. *parviflorus* (Nees) Sundberg. Creekbanks. #1716.

Baccharis salicifolia (Ruiz & Pavon) Pers. Batamote (S); baashoma (P). Sunlit creekbanks. #329.

Baccharis thesioides H.B.K. Hierba del pasmo (S). Oak and pine forests. #1417.

Berlandiera lyrata var. *monocephala* B.L. Turner. Coronilla (S); ko'ovalyi (P). Fields. #1486 (TEX).

Bidens aurea (Ait.) Sherff. Fields and forests. #341.

Bidens gentryi Sherff. Creekbanks and oak forests. #2263.

Bidens odorata var. *rosea* (Sch.-Bip.) Melchert & B.L. Turner. Common in cultivated and fallow fields. #856.

Brickellia betonicifolia A. Gray. Fields, creekbanks, and maple forests. #2056.

Brickellia eupatorioides var. *chlorolepis* (Woot. & Standl.) B.L. Turner. Fields and cypress forests. #2220.

Brickellia pringlei A. Gray. Creekbanks and pine forests. #520.

Brickellia simplex A. Gray. Cypress forests. #1191.

Carminatia tenuiflora DC. Pine and cypress forests. #2105.

Carphochaete pringlei (S. Wats.) B.L. Turner. Oak and pine forests and manzanita thickets. #1853.

Carphochaete wislizeni A. Gray. Pine forests and manzanilla thickets. #2074.

Chamomilla recutita (L.) Rausch. Fields. Probably escaped from cultivation. #1994 (TEX).

Chaptalia texana E. Greene. Pine and cypress forests. #2201.

Conyza canadensis (L.) Cronq. Fields and oak forests. #1266.

Cosmos bipinnatus Cav. Escape from cultivation. #1124 (TEX).

Cosmos linearifolius var. *magnifolius* Sherff. Oak and cypress forests. #1692.

Cosmos parviflorus (Jacq.) Pers. Juve (S); a'loke (P). Common weed in cultivated and fallow fields. #301.

Cosmos pringlei B.L. Rob. & Fernald. Bavisa (S); bavish (P). Oak and maple forests. #2123.

Cosmos palmeri B.L. Rob. Oak and maple forests. #1576.

Dahlia coccinea Cav. Dalia or cachana (S); kachana (P). Oak and cypress forests. #992.

Dahlia sherffii Sorenson. Dalia or cachana (S); kachana (P). Cypress forests. #1522.

Dyssodia porophylla subsp. *cancellata* (Cass.) Strother. Fields. #1975 (TEX).

Erigeron basaseachensis Nesom. Maple forests. #2127.

Erigeron delphinifolius Willd. Oak forests. #2267.

Erigeron flagellaris A. Gray. Fields. #371.

Erigeron fraternus E. Greene. Maple forests. #2137.

Erigeron fundus Nesom. Cypress and maple forests. #1432.

Erigeron oreophilus Greenm. Shaded streambanks. #1185.

Erigeron strigulosus E. Greene. Fields. #1130.

Eupatorium ovaliflorum Hook. & Arn. Oak and pine forests. #1326.

Eupatorium sonorae A. Gray. Cypress forests and shaded springs. #2288.

Galinsoga parviflora Cav. Fields and oak forests. #2086.

Gamochaeta americana (Mill.) Wedd. Oak forests. #2183 (TEX).

Gamochaeta purpurea (L.) Cabrera *vel aff.* Oak forests. #430.

Gnaphalium sphacilatum H.B.K. Streambanks. #498.

Gnaphalium stramineum H.B.K. Fields. #537 (TEX).

Gnaphalium thermale A. Nelson. Fields and oak and maple forests. #2121.

Gnaphalium viscosum H.B.K. Manzanilla del río (S). Fields and cypress forests. #622.

Gutierrezia wrightii A. Gray. Creekbanks and fields. #1131.

Heterosperma pinnatum Cav. Fields and forests. #1897.

Heterotheca subaxillaris (Lam.) Britt. & Rusby. Fields, forests, and creekbanks. #1194.

Hieracium abscissum Less. Oak forests. #1564.

Hieracium fendleri C.H. Schultz. Oreja de conejo (S); bopkama sha'i (P). Forests. #366 (TEX).

Hieracium pringlei A. Gray. Oak forests. #521 (TEX).

Hymenothrix palmeri var. *glandulosa* (S. Wats.) B.L. Turner. Pine forests. #1312.

Hymenothrix palmeri A. Gray var. *palmeri*. Oak forests and manzanita thickets. #2077.

Hymenothrix wrightii A. Gray. Fields and cliff faces. #2309 (TEX).

Jaegeria hirta (Lag.) Less. Cypress forests. #2177.

Laennecia eriophylla (A. Gray) Nesom. Manzanita thickets, and oak and pine forests. #1570.

Laennecia pimana Nesom & Laferr. Unplowed fields. #2216 (TEX, type).

Laennecia sophiifolia (H.B.K.) Nesom. Pine forests. #2059.

Lasianthaea podocephala (A. Gray) K. Becker. Fields and oak forests. #1810.

Leibnitzia occimadrensis Nesom. Cypress and maple forests. #2136.

Machaeranthera gracilis (Nutt.) Shinners. Fields. #1033.

Melampodium appendiculatum B.L. Rob. Fields and forests. #937.

Melampodium longicorne A. Gray. Fields and cypress forests. #1157.

Melampodium perfoliatum (Cav.) H.B.K. Fallow fields. #1690.

Melampodium sericeum Lag. Fields. #1637.

Milleria quinqueflora L. Oak and cypress forests. #1197.

Montanoa leucantha subsp. *arborescens* (DC.) V.A. Funk. Batayaqui (S); nakshura (P). Oak forests. #321.

Pectis pimana Laferr. & Keil. Hierba de la hormiga (S). Fields. #2013 (type).

Pectis prostrata Cav. Fields and forests. #1202.

Perityle microcephala A. Gray. Cliff faces, manzanita thickets, and oak and pine forests. #2081.

Pinaropappus junceus A. Gray. Pine and cypress forests. #514.

Pinaropappus roseus (Less.) Less. var. *roseus*. Fields and pine forests. #455.

Porophyllum coloratum (H.B.K.) DC. Oak forests. #323.

Porophyllum macrocephalum DC. Oak forests. #2095 (TEX).

Psacalium decompositum (A. Gray) H. Rob. & Brettell. Matariqui (S); t+p+lyi (P). Fields and oak forests. #876.

Pyrropappus pauciflorus (D. Don) DC. Fields. #1228 (TEX).

Schkuhria pinnata var. *guatemalensis* (Rydb.) McVaugh. Fields and oak forests. #1833.

Senecio carlomasonii B.L. Turner & T. Barkley. Fields. #952.

Senecio lemmonii A. Gray. Cypress forests. #1195 (TEX).

Senecio masonii B.L. Turner. Oak and pine forests. #2097.

Senecio salignus DC. Fields. #1405.

Simsia amplexicaulis (Cav.) Pers. Fields. #1081.

Solidago wrightii A. Gray. Cypress and maple forests. #2254 (TEX).

Sonchus asper (L.) Hill. Cultivated fields. #1545.

Stevia glandulosa var. *gentryi* Grashoff. Cliff faces. #2279.

Stevia ovata Willd. var. *ovata*. Fields and oak forests. #1012.

Stevia palmeri A. Gray var. *palmeri*. Fields, springs, and forests. #2141.

Stevia serrata Cav. var. *serrata*. Fields and oak forests. #1078.

Stevia viscida H.B.K. Fields. #303.

Tagetes filifolia Lag. Anís (S). Oak and cypress forests. #1201.

Tagetes jaliscensis Greenm. Fields. #1010.

Tagetes lucida Cav. Yerbanís (S). Common in unplowed fields. #310.

Tagetes micrantha Cav. Fields and oak forests. #1800.

Tagetes palmeri A. Gray. Oak forests.#1190.

Tagetes subulata Cerv. Oak forests. #1160.

Tagetes wislizeni Greenm. Oak forests. #326.

Taraxacum officinale L. Cypress forests. #1940.

Tithonia tubaeformis (Jacq.) Cass. Girasol del campo (S); wa'a hioktama sha'i (P). Fields and open oak forests. #1053.

Tridax erecta A. Gray. Oak forests. #2271 (TEX).

Verbesina parviflora (H.B.K.) S.F. Blake. Pine, oak, and cypress forests. #1785.

Vernonia vernonioides (A. Gray) Bacigalupi. Fields. #1983.

Viguiera montana Rose. Oak forests. #1402.

Viguiera multiflora (Nutt.) S.F. Blake var. *multiflora*. Fields. #302.

Wedelia gentryi B.L. Turner. Cypress forests. #1101.

Wedelia greenmanii B.L. Turner. Oak forests and cliff faces. #1950.

Wedelia pimana B.L. Turner. Fields. #646 (TEX, type).

Xanthocephalum eradiatum (Lane) Nesom. Fields. #867.

Zinnia peruviana (L.) L. Contrahierba (S); v+v+gi hioktoktama (P). Oak forests. #1236.

Zinnia zinnioides (H.B.K.) Olorode & Torres. Fields and open oak forests. #941.

Begoniaceae

Begonia gracilis var. *nervipilosa* A. DC. Caña aigre (S); h+'+k sha'i (P). Shaded creekbanks. #1683.

Berberidaceae

Berberis pimana Laferr. & Marr. Palo amarillo or palo aigre (S); o'ob u'ushi (P). Cypress and maple forests; occasionally on the northern (shaded) sides of large boulders. #1693 (type).

Betulaceae

Alnus oblongifolia Torr. Carnero (S); t+pura (P). Creekbanks in cypress forest. #418.

Boraginaceae

Lithospermum tubuliflorum E. Greene. Fields. #1501.

Brassicaceae

Arabis microsperma Rollins. Fields, oak and cypress forests. #1069 (GH, type).

Brassica rapa L. Streambanks and cultivated fields. #1832.

Descurainia pinnata subsp. *halictorum* (Cockerell) Detling. Fields. #420.

Dryopetalon runcinatum var. *laxiflorum* Robbins. Palo de cuervo (S); kokonchara (P). Creekbanks. #1387.

Lepidium densiflorum Schrader. Fields and oak forests. #1474.

Raphanus raphanistrum L. Cultivated fields. Uncommon. #1027.

Rorippa mexicana (DC.) Standl. & Steyerm. Creekbank. #1462.

Schoenocrambe linearifolia (A. Gray) Rollins. Oak forests. #1536.

Buddlejaceae

Buddleja parviflora H.B.K. Oak forests. #449.

Buddleja sessiliflora H.B.K. Oak forests. #2291.

Cactaceae

Echinocereus polyacanthus Engelm. var. *polyacanthus*. Cholla (S); tu'i shogi (P). Fields and open oak forests. #405.

Echinocereus sheeri var. *obscuriensis* A. Lau. Cholla (S); tu'i shogi (P). Shaded cliff faces in cypress and maple forests. #1425.

Echinocereus stoloniferus var. *tayopensis* (W.T. Marsh) N.P. Taylor. Cholla (S); tu'i shogi (P). Fields, oak forests, and manzanita thickets. #381.

Mammillaria barbata Engelm. *vel aff.* Cholla (S); tu'i shogi (P). White- and pink-flowered specimens present. Fields and open oak forests. #2189.

Mammillaria sonorensis Craig *vel aff.* Pitahaya (S). Cliff faces in cypress forest. #1406.

Opuntia durangensis Britt. & Rose *vel aff.* Duraznillo (S); pashko'o nava (P). Red- and yellow-fruited specimens present. Fields, cliff faces, and open oak forests. #1198.

Opuntia macrorhiza Engelm. *vel aff.* Nopal de zorra (S); duji (P). Fields and oak forests. #1847.

Opuntia robusta Wendl. *vel aff.* Two folk varieties are recognized, the purple-fruited tuna temporal (Pima name, "nava") maturing in August, and the red-fruited tuna noviembreña ("t+t+'ibwi") maturing in October or November. Fields, cliff faces, and oak forests. #1437.

Campanulaceae

Lobelia anatina F.E. Wimmer. Maple forests. #1321.

Lobelia cardinalis var. *pseudosplendens* McVaugh. Flor de chuparosa (S); bipshi hioshgama (P). Springs and cypress forests. #1242.

Lobelia fenestralis Cav. Fields. #967.

Lobelia goldmanii (Fernald) Ayers. Fields and creekbanks. #375.

Lobelia laxiflora var. *angustifolia* DC. Creekbanks. #1431.

Triodanis biflora (A. Gray) E. Greene. Fields. #419.

Caprifoliaceae

Lonicera cerviculata S.S. White. Palo de venado (S). Creekbanks in oak and cypress forests. #451.

Caryophyllaceae

Arenaria lanuginosa subsp. *saxosa* (A. Gray) Maguire. Forests. #2032.

Cerastium nutans Raf. Oak and maple forests. #1682.

Cerastium texanum Britton. Cliff faces. #368 (RM).

Drymaria effusa A. Gray var. *effusa*. Fields and cliff faces. #840.

Drymaria molluginea (Lag.) Didr. Fields. #1635.

Drymaria villosa subsp. *palustris* (Cham. & Schlecht.) J. Duke. Fields and cypress forests. #1776.

Silene scouleri var. *eglandulosa* Hitchcock & Maguire. Cypress forests. #1313.

Chenopodiaceae

Chenopodium leptophyllum Nutt. Chuale (S); waja (P). Cultivated fields. #1048.

Teloxys ambrosioides (L.) W.A. Weber. Pasote or epasote (S). Creekbanks. #1192.

Teloxys graveolens var. *neomexicanum* (Aellen) Aellen. Hierba de zorra (S). Fields and pine forests. #1831.

Cistaceae

Helianthemum pringlei S. Wats. Fields and manzanita thickets. #1291.

Lechea tripetala (Moç. & Sessé) Britton. Oak forests. #730.

Clusiaceae

Hypericum pratense Schlecht. & Cham. Fields and forests. #1188.

Hypericum punctatum Lam. Forests. #1098.

Cochlospermaceae

Amoreuxia palmatifida Moç. & Sessé. Open fields. #1829.

Convolvulaceae

Evolvulus alsinoides L. Cliff faces. #1864 (ASU).

Evolvulus arizonicus A. Gray. Forests and manzanita thickets. #788 (ASU).

Evolvulus sericeus Sw. Fields and cliff faces. #1479 (ASU).

Ipomoea capillacea (H.B.K.) G. Don. Fields and oak forests. #1675.

Ipomoea costellata Torr. Enredadera (S); shiitulyi (P). Fields, creekbanks, and oak forests. #1200 (ASU).

Ipomoea cristulata H. Hallier. Fields. #1955 (ASU).

Ipomoea madrensis S. Wats. Fields and forests. #1622.

Ipomoea pubescens Lam. Oak forests. #1687.

Ipomoea purpurea (L.) Roth. Fields, creekbanks, and springs. #1199.

Ipomoea tenuiloba var. *lemmonii* (A. Gray) Yatsk. & C. Mason. Fields, cliff faces, and cypress forests. #1727.

Ipomoea thurberi A. Gray. Fields. #879 (ASU).

Crassulaceae

Echeveria cragiana E. Walther. Jamón (S); hiishulyi (P). Pine forests. #959.

Sedum alamosanum S. Wats. Cypress forests. #1295.

Sedum mellitulum Rose. Cliff faces. #789.

Sedum vinicolor S. Wats. Cliff faces. #1174.

Villadia squamulosa (S. Wats.) Rose. Oak forests. #1843.

Cucurbitaceae

Apodanthera undulata A. Gray. Calabazilla chiquita (S); ara (P). Fields. #1530.

Cucurbita foetidissima H.B.K. Calabazilla grande (S); ara (P). Fields. #650 (CAS).

Cyclanthera dissecta (Torr. & A. Gray) Arn. Creekbanks in pine and cypress forests. #984.

Cuscutaceae

Cuscuta campestris Yuncker. Hongo de zacate (S); viva viikorgara (P). Parasite on herbs in fields. #318.

Ericaceae

Arbutus arizonica (A. Gray) Sarg. Madroño (S); hyopdyama (P). Pine and cypress forests. #409.

Arbutus xalapensis H.B.K. Madroño; hyopdyama (P). Pine and cypress forests. #354.

Arctostaphylos pungens H.B.K. Manzanilla (S); iol (P). Oak forests and manzanita thickets. #1272.

Euphorbiaceae

Acalypha neomexicana Muell.-Arg. *vel aff.* Creekbanks and oak and cypress forests. #2202.

Euphorbia anychioides Boiss. Fields. #2290.

Euphorbia bilobata Engelm. Oak forests. #1123.

Euphorbia densiflora (Klotzsch & Garcke) Klotzsch. #2198.

Euphorbia dentata Michx. Contrahierba (S); v+v+gi hioktoktama (P). Fields and oak and cypress forests. #1775.

Euphorbia hexagonoides S. Wats. Dry grassy slope. #1096.

Euphorbia hirta L. Creekbank. #1563 (SD).

Euphorbia indivisa (Engelm.) Tidestrom. Oak forests. #636 (SD).

Euphorbia macropus (Klotzsch & Garcke) Boiss. #916.

Euphorbia sphaerorhiza Benth. #1487.

Tragia nepetifolia Cav. Ortiguilla (S); t++m+ra (P). Fields and oak forests. #424.

Fabaceae

Acacia angustissima (Mill.) Kuntze. Ruína (S); shishpura (P). Fields and forests. #334.

Acacia villosa (Sw.) Willd. Grassy slopes. #1424.

Aeschynomene villosa Poir. Creekbanks. #2050.

Astragalus nuttallianus var. *austrinus* (Small) Barneby. Creekbanks. #1397.

Calliandra humilis Benth. var. *humilis*. Fields and cypress forests. #1978.

Calliandra humilis var. *reticulata* (A. Gray) L. Benson. Fields. #881.

Chamaecrista nictitans (L.) Moench. Fields. #1644.

Cologania angustifolia Kunth. Pine forests and manzanita thickets. #1481.

Cologania broussonettii (Balb.) DC. Frijolillo (S). Fields. #339.

Cologania obovata Schlecht. Manzanita thickets and oak and pine forests. #1819.

Coursetia caribaea var. *sericea* (A. Gray) Lavin. Oak and pine forests. #467.

Coursetia glabella (A. Gray) Lavin. Fields. #877.

Crotalaria pumila Ortega. Huevo de ratón or cascabel (S); bopshok shu'udara (P). Fields and creekbanks. #308.

Crotalaria sagittalis L. Fields and forests. #1972.

Dalea albiflora A. Gray. Fields. #309 (NY).

Dalea exigua Barneby. Fields and oak and cypress forests. #1912.

Dalea filiformis A. Gray. Fields and oak and pine forests. #1225.

Dalea grayi (Vail) L.O. Williams. Oak forests and manzanita thickets. #512.

Dalea leporina (Ait.) Bullock. Creekbanks and fields. #2044.

Dalea lumholtzii B.L. Rob. & Fernald. Oak forests. #1182.

Dalea nelsonii (Rydb.) Barneby. Fields. #2029.

Dalea obreniformis (Rydb.) Barneby. Cultivated and fallow fields. #1037.

Dalea pinetorum Gentry. Oak forests. #1100.

Dalea pringlei var. *multijuga* Barneby. Oak forests. #2181.

Dalea versicolor var. *calcarata* (Gentry) Barneby. Ibimaki (P). Cypress forests. #364.

Desmodium angustifolium (H.B.K.) DC. var. *angustifolium*. Fields. #1641.

Desmodium angustifolium var. *gramineum* (A. Gray) Schubert. Oak forests. #1866.

Desmodium hartwegianum Hemsl. Mala mujer (S); haramkulyi (P). Fields and oak forests. #327.

Desmodium madrense Hemsl. Fields and oak and cypress forests. #1350.

Desmodium neomexicanum A. Gray. Fields and forests. #1861.

Desmodium procumbens var. *exiguum* (A. Gray) Schubert. Cypress forests. #2261 (MONT).

Desmodium procumbens (Mill.) Hitchc. var. *procumbens*. Oak forests. #1088.

Desmodium prostratum Brandegee. Forests. #2071.

Desmodium psilophyllum Schlecht. Riverbanks in maple and cypress forests. #2117.

Eriosema pulchellum (H.B.K.) G. Don. Fields and forests. #648.

Erythrina flabelliformis Kearn. Chilicote (S). Oak forests. #517.

Eysenhardtia orthocarpa (A. Gray) Wils. var. *orthocarpa*. Palo dulce (S); ba'iva (P). Creekbanks and steep hillsides. #1006.

Galactia wrightii A. Gray. Oak forests. #562.

Indigofera sphaerocarpa A. Gray. Oak forests. #1349 (MONT).

Lotus alamosanus (Rose) Gentry. Creekbanks in pine and cypress forests. #1412.

Lotus greenei (Woot. & Standl.) Ott. Oak forests. #511.

Lupinus huachucanus M.E. Jones. Pine and maple forests. #2251 (ANSM, MEXU).

Macroptilium gibbosifolium (Ort.) A. Delgado. Creekbanks and oak forests. #644.

Mimosa dysocarpa Benth. Pine and oak forests. #1930.

Mimosa grahamii A. Gray var. *grahamii*. Gatuña (S); miishuktara (P). Fields and oak and cypress forests. #1304.

Phaseolus acutifolius var. *tenuifolius* A. Gray. Cypress forests. #2092.

Phaseolus leptostachyus Benth. Fields and oak forests. #1809.

Phaseolus parvulus E. Greene. Maple and cypress forests. #1726.

Phaseolus pauciflorus G. Don. Fields, manzanita thickets, and oak and pine forests. #1685.

Phaseolus ritensis M.E. Jones. Cocolmeca (S). Oak and pine forests. #1790.

Tephrosia cinerea (L.) Pers. *vel aff.* Pine forests. #2265.

Tephrosia nicaraguensis Benth. & Oerst. Oak forests. #1018.

Trifolium amabile H.B.K. var. *amabile*. Fields and cypress forests. #1771.

Trifolium pinetorum E. Greene. Fields. #416 (MONT).

Trifolium wormskioldii Lehm. Creekbanks and fields. #809.

Vicia pulchella H.B.K. Fields and oak forests. #920.

Zornia reticulata Sm. Hierba de la víbora (S); hada ko'o kaskavélgara (P). Fields. #1222.

Zornia venosa Mohl. This species and the previous one occur side-by-side with no apparent intergradation. Fields. #1904.

Fagaceae

Quercus chihuahuensis Trel. Encino blanco (S); bopkama tu'a (P). Forests. #314.

Quercus chuhuichupensis Muller. Encino chinito or encino chapito (S); gagyap+lyi (P). Oak forests and manzanita thickets. #541.

Quercus coccolobaefolia Trel. Encino de hoja ancha (S); haap+ky+lyi (P). Oak and pine forests. #905.

Quercus durifolia von Seemen. Encino colorado (S); shipura (P). Oak and pine forests. #548.

Quercus epileuca Trel. Barril (S); shojara (P). Oak and pine forests. #1380.

Quercus mcvaughii Spellenberg. Oak forests. #1381.

Quercus urbanii Trel. Oak and pine forests. #2078.

Quercus viminea Trel. Cusi (S and P). Oak and pine forests. #320.

Quercus × knoblochii Muller. Oak and pine forests. Hybrid between *Q. viminea* and *Q. coccolobaefolia*. There is a considerable amount of intergradation in Nabogame. #1290.

Garryaceae

Garrya laurifolia Benth. subsp. *laurifolia*. Cypress and maple forests. #1580.

Garrya wrightii Torr. Oak and cypress forests. #1470.

Gentianaceae

Centaurium nudicaule (Engelm.) Robinson. Fields. #373, 428.

Gentianella microcalyx (Lemm.) Gill. Cypress forests. #330, 1285.

Geraniaceae

Geranium albidum Hands & Small. Creekbanks in cypress forests. #415.

Geranium subulato-stipulatum Kunth. Creekbanks in oak and cypress forests. #921.

Geranium wislizeni S. Wats. Creekbanks in oak, cypress, and maple forests. #328.

Gesneriaceae

Achimenes grandiflora (Schiede) DC. Flor de relíz (S); bava hioshgama (P). Shaded cliff faces in cypress forests. #966.

Lamiaceae

Agastache mearnsii Woot. & Standl. Oak and cypress forests. #1784.

Agastache pallida var. *coriacea* R. Sanders. Oak forests. #1149.

Hedeoma patens M.E. Jones. Orégano chiquito (S); toynkama (P). Fields and oak and cypress forests. #1839.

Hyptis seemannii A. Gray. Cliff faces and fields. #1213.

Lepechinia caulescens (Ort.) Epling. Fields. #974.

Mentha piperita L. *vel aff.* Hierba buena (S). Under *Baccharis salicifolia* along creekbank. #316.

Monarda citriodora subsp. *austromontana* (Epling) Scora. Orégano grande (S); toynkama (P). Fields. #964.

Prunella vulgaris L. Espiga de trigo (S); dogo t++lyigo (P). Creekbanks and cypress forests. #1287.

Salvia azurea Lam. Oak and pine forests. #1937.

Salvia galinsogifolia Fernald. Springs and oak and maple forests. #1932.

Salvia goldmannii Fernald. Creekbanks and oak forests. #1750.

Salvia greggii A. Gray. Oak and cypress forests. #734.

Salvia hispanica L. Espiga de trigo (S); dogo t++lyigo (P). Creekbanks, fields, and cypress forests. #307.

Salvia lemmonii A. Gray. Oak and cypress forests. #1624.

Salvia reptans var. *glabra* (A. Gray) K.M. Peterson. Fields and oak forests. #1224.

Salvia subincisa Benth. Cypress forests. #2113.

Salvia tiliaefolia Vahl. Fields and oak forests. #1749.

Stachys bigelovii A. Gray. Cypress forests. #554.

Stachys coccinea Jacq. Flor de chuparosa (S); bipshi hioshgama (P). Fields and forests. #1546.

Lentibulariaceae

Pinguicula caudata Schlecht. Maple forests. #1574.

Loranthaceae

Phoradendron bolleanum (von Seemen) Eichl. Toji de táscate or toji de madroño; haramkulyi (P). Parasitic on *Arbutus* spp. and *Juniperus deppeana*. #410.

Phoradendron engelmannii Trel. Toji de encino; haramkulyi (P). Parasitic on *Quercus* spp. #337.

Lythraceae

Cuphea llavea Lex. Bayburín (S); h+kt+lyi (P). Creekbanks and cypress forests. #743.

Cuphea wrightii A. Gray. Fields and open oak forests. #1234.

Rotala ramosior (L.) Koehne. Streambanks. #1865.

Malpighiaceae

Aspicarpa hirtella Rich. Oak forests. #1216.

Malvaceae

Anoda cristata (L.) Schlecht. Tusi (S); shiipugi (P). Fields and streambanks. #1051.

Malva parviflora L. Malva. Fields and oak forests. #805.

Sida glabra Mill. Cliff faces. #1212.

Sida neomexicana A. Gray. Fields and pine and oak forests. #2000.

Nyctaginaceae

Boerhaavia coccinea Mill. Fields. #684.

Mirabilis longiflora L. Maravilla (S). Fields and oak forests. #885 (NMC).

Oleaceae

Forestiera pubescens Nutt. Oak, cypress, and maple forests. #1389.

Fraxinus papillosa Lingelsheim. Fresno (S); piichai (P). Forests. #977.

Fraxinus pennsylvanica subsp. *velutina* (Torr.) Miller. Fresno (S); piichai (P). Oak and pine forests. #1670.

Osmanthus americanus (L.) Benth. & Hook. Maple forests. #1320.

Onagraceae

Epilobium fendleri Hausskn. Springs and creekbanks. #2178.

Gaura hexandra var. *gracilis* (Woot. & Standl.) Raven & Gregory. Fields. #685.

Gongylocarpus rubricaulis Cham. & Schlecht. Fields and oak forests. #1999.

Oenothera kunthiana (Spach) Munz. Sunlit creekbanks. #370.

Oenothera pubescens Spreng. Fields. #555.

Oenothera rosea Ait. Rosal (S). Fields. #300.

Orobanchaceae

Conopholis alpina var. *mexicana* (S. Wats.) Haynes. Maiz del oso (S); vohi huungara (P). Pine forests. #355.

Oxalidaceae

Oxalis albicans H.B.K. subsp. *albicans*. Hierba aigre (S); h+kt+lyi (P). Common in sunny locations. #369.

Oxalis alpina (Rose) Kunth. Fields. #1517.

Oxalis decaphylla H.B.K. Fields and forests. #1493.

Oxalis hernandesii DC. Fields, oak forests, and manzanita thickets. #1497.

Oxalis latifolia H.B.K. Fields and maple forests. #1488.

Passifloraceae

Passiflora bryonioides H.B.K. Tonolochi (S); baopkokama (P). Cliff faces and manzanita thickets. #1668.

Passiflora quercetorum Killip. Sandía (S). Cypress forests. #1507.

Phytolaccaceae

Phytolacca americana L. Fields and creekbanks. #342.

Plantaginaceae

Plantago australis var. *hirtella* (H.B.K.) Rahn. Cypress forests. #522.

Plantago linearis H.B.K. Fields. #1935.

Podostemaceae

Podostemon ceratophyllum Michx. Aquatic. #2007.

Polemoniaceae

Ipomopsis pinnata (Cav.) V. Grant. Fields and pine and oak forests. #1838.

Loeselia glandulosa (Cav.) G. Don. Oak forests. #319.

Polygalaceae

Monnina wrightii A. Gray. Fields and forests. #2083.

Polygala sinaloae S.F. Blake *vel aff.* Fields and pine and oak forests. #850 (SD).

Polygala glochidiata H.B.K. Fields and oak forests. #1863.

Polygala hemipterocarpa A. Gray. Fields and oak forests. #423.

Polygala obscura Benth. var. *obscura*. Fields and forests. #793.

Polygonaceae

Polygonum lapathifolium L. Sunlit creekbanks. #1711.

Polygonum mexicanum Small. Sunlit creekbanks. #1714.

Polygonum persicaria L. Sunlit creekbanks. #343.

Polygonum punctatum Ell. Shaded springs in cypress forest. #1883.

Pterostegia drymarioides Fisch. & Meyer. Creekbanks. #2229.

Rumex obtusifolius L. Lengua de vaca (S); vakashin+ñir (P). Fields and forests. #2051.

Portulacaceae

Portulaca oleracea L. Verdolaga (S). Cultivated fields. #1834.

Portulaca suffrutescens Engelm. Fields. #1464.

Talinum marginatum E. Greene. Cliff faces. #571.

Primulaceae

Samolus vagans E. Greene. Cypress forests. #2277.

Ranunculaceae

Clematis drummondii Torr. & A. Gray. Enredadera de nopal (S); kaava boporo (P). Fields, often climbing over *Opuntia* spp. #853.

Delphinium wislizeni Engelm. Fields and cypress forests. #1143.

Ranunculus circinatus var. *subrigidus* (W. Drew) L. Benson. Aquatic. #352.

Ranunculus macranthus Scheele. Streambanks. #997.

Thalictrum pinnatum S. Wats. Fields and open pine and oak forests. #1555.

Rhamnaceae

Ceanothus coeruleus Lag. Maple forests. #1577.

Ceanothus depressus Benth. Junco (S); ho'i (P). Oak forests. #1520.

Ceanothus lanuginosus (Jones) Rose. Pine and cypress forests. #1297.

Rhamnus scopulorum (M.E. Jones) C.B. Wolf. Oak and cypress forests. #1664.

Rosaceae

Cercocarpus montanus var. *paucidentatus* (S. Wats.) F.L. Martin. Riverbank. #1325.

Holodiscus dumosus var. *australis* (Heller) Ley. Cypress forests. #564.

Potentilla thurberi A. Gray. Fields and oak forests. #1715.

Prunus gentryi Standl. Ahuasiqui (S); humpalyi (P). Both purple-fruited specimens (forma *gentryi*) and orange- to yellow-fruited specimens (forma *flavipulpa* Laferr.) are present. Creekbanks, cypress and maple forests. #1600 (type of forma *flavipulpa*).

Prunus serotina var. *virens* (Woot. & Standl.) McVaugh. Capulín (S); mo'osh-gama (P). Pine and cypress forests. #392.

Rubus arizonensis Focke *vel aff.* Mora (S). Maple forests. #1579.

Rubiaceae

Bouvardia ternifolia (Cav.) Schlecht. Fields and oak forests. #742.

Crusea diversifolia (H.B.K.) Anderson. Fields. #859.

Crusea longiflora (Willd.) Anderson. Fields, forests, and manzanita thickets. #849.

Crusea wrightii A. Gray var. *wrightii*. Fields. #1660.

Galium hystricocarpum Greenm. Oak forests and cliff faces. #1737.

Galium mexicanum subsp. *asperrimum* (A. Gray) Demp. Pine, cypress, and maple forests. #2264 (UC).

Galium microphyllum A. Gray. Cliff faces and creek banks. #1275.

Hedyotis pygmaea Roemer & Schultes. Fields and creekbanks. #1468.

Mitracarpus hirtus (L.) DC. Fields and cliff faces. #2206.

Salicaceae

Salix bonplandiana H.B.K. Sauzo del río (S); tu'ulyi (P). Streambanks. #388.

Salix lasiolepis Benth. Creekbanks in pine and cypress forests. #1410.

Salix taxifolia H.B.K. Riverbank. #2210.

Saxifragaceae

Heuchera sanguinea Engelm. Flor de piedra (S); hoda hioshgama (P). Shaded cliff faces in cypress forest. #360.

Scrophulariaceae

Brachystigma wrightii (A. Gray) Pennell. Fields and open forests. #1140.

Buchnera pusilla H.B.K. Fields. #2172.

Castilleja nervata Eastw. Pine forests. #1135.

Castilleja tenuiflora Benth. Creekbanks, forests, and manzanita thickets. #1415.

Escobedia crassipes Pennell. Oak forests. #1742.

Lamourouxia viscosa H.B.K. Fields. #1013.

Leucospora intermedia (A. Gray) Keil. Oak forests. #1700.

Mecardonia vandellioides (H.B.K.) Pennell. Creekbanks. #1613.

Mimulus guttatus DC. Shaded creekbanks. #1429.

Mimulus pallens E. Greene. Creekbanks. #1395.

Mimulus dentilobus B.L. Rob. & Fernald. Creekbanks. #372.

Penstemon campanulatus (Cav.) Willd. Manzanita thickets and oak and cypress forests. #1299.

Penstemon stenophyllus A. Gray. Fields. #1132.

Penstemon fasciculatus A. Gray. Oak forests. #982.

Penstemon wislizeni (A. Gray) Straw. Pine and oak forests. #1175.

Seymeria sinaloana (Pennell) Standl. Pine and oak forests. #1180.

Veronica peregrina subsp. *xalapensis* (H.B.K.) Pennell. Creekbanks. #395.

Solanaceae

Browallia eludens R. VanDevender & P. Jenkins. Oak forests and open cliff faces. #1629 (paratype).

Jaltomata procumbens (Cav.) J.L. Gentry. Tulusín (S); tuushkulyi (P). Fields and oak forests. #784.

Physalis caudella Standl. Tomatillo (S). Cultivated fields. #621.

Physalis microcarpa Urban & Eckman. Tomatillo chiquito (S). Fields and oak forests. #1552.

Physalis minima L. Tomatillo chiquito. Fields and oak forests. #1178.

Physalis pubescens L. Tomatillo (S). Fields and cypress forests. #1686.

Solanum nannodes Corr. *vel aff.* Papa del monte (S). Cypress forests and as a weed in potato fields. #1525.

Solanum nigrescens Mart. & Gal. Fields, oak forests, and manzanita thickets. #561.

Solanum rostratum Dunal. Fields near riverbank. #1030.

Tiliaceae

Triumfetta discolor Rose. Mala mujer (S); haramkulyi (P). Fields and pine and cypress forests. #986.

Valerianaceae

Valeriana sorbifolia H.B.K. var. *sorbifolia*. Cypress forests. #1949.

Verbenaceae

Glandularia bipinnatifida (Nutt.) Nutt. Cypress forests. #466.

Priva mexicana (L.) Pers. Mala mujer (S); haramkulyi (P). Oak and pine forests. #864.

Verbena carolina L. Fields. #1080.

Verbena neomexicana (A. Gray) Small. Fields, oak forests, and manzanita thickets. #1121.

Verbena perennis Woot. Fields and oak and pine forests. #1122.

Violaceae

Viola adunca J.E. Smith. Pine, cypress, and maple forests. #1400 (VDB).

Vitaceae

Vitis arizonica Engelm. Parra (S); shohar u'ushi (P). Shaded creekbanks. #450.

MONOCOTYLEDONAE

Agavaceae

Agave polianthiflora Gentry. Taréchari (S); matashmayi (P). Pine and oak forests. #1454.

Agave shrevei subsp. *matapensis* Gentry. Chugilla or churiqui (S); mayi (P). Cliff faces and oak forests. #1792.

Manfreda singuliflora (S. Wats.) Rose. Creekbanks in oak forests. #1662.

Yucca madrensis Gentry. Jamol (P); hoyi (P). North-facing slopes in oak forests (Laferrière 1990a). #1300.

Amaryllidaceae

Hymenocallis pimana Laferr. Cebollín (S); shi'iva (P). Unplowed fields and sun-lit creekbanks. #1456 (type).

Hypoxis mexicana Schultes. Fields and manzanita thickets. #519.

Bromeliaceae

Tillandsia erubescens Schlecht. Flor de encino (S); u'ush hioshgama (P). Epiphytic on most tree species; occasionally on shaded cliff faces in moist canyons. #406.

Tillandsia recurvata L. Epiphytic on various trees. #489.

Commelinaceae

Commelina coelestis Willd. Fallow fields and oak and pine forests. #1615.

Commelina dianthifolia Del. Oak, pine, and cypress forests. #1595.

Gibasis linearis (Benth.) Rohweder. Oak, pine, and cypress forests. #1503.

Tradescantia pinetorum E. Greene. Fallow fields and oak forests. #1540.

Tripogandra purpurescens (Schauer) Handlos subsp. *purpurescens*. Oak, pine, and cypress forests. #801.

Cyperaceae

Bulbostylis capillaris (L.) Clarke. Cultivated fields, oak and pine forests. #700.

Carex agrostoides MacKenzie. Cypress forests. #484.

Carex chihuahuensis MacKenzie. Creekbanks. #1430.

Carex endlichii Kukenth. Cypress forests. #1418.

Carex leucodonta Holn. Pine forests. #506.

Carex longicaulis Bock. Pine forests. #525 (TEX).

Carex turbinata Liebm. Maple forests. #1398.

Cyperus amabilis Vahl. Fallow fields. #2009.

Cyperus bipartitus Torr. Springs and creekbanks. #1169.

Cyperus dipsaceus Liebm. Fields and pine forests. #1609.

Cyperus esculentus L. Grulla (S); to'ora (P). Common in cultivated fields; also pine and oak forests. #480.

Cyperus hermaphroditus (Jacq.) Standl. Fields and forests. #1104.

Cyperus niger Ruiz & Pavon. Springs and creek banks. #2045.

Cyperus seslerioides H.B.K. Oak forests and manzanita thickets. #630.

Cyperus squarrosus L. Fallow fields. #1910.

Eleocharis parvula (Roem. & Schult.) Link. Creekbanks. #1452.

Eleocharis rostellata (Torr.) Torr. Creekbanks. #1616.

Fimbristylis dichotoma (L.) Vahl. Creekbanks and oak forests. #1856.

Fimbristylis autumnalis (L.) Roem. & Schult. Fields, creekbanks, and springs. #2159.

Fimbristylis puberula (Michx.) Vahl. Oak forests. #1092.

Iridaceae

Nemastylis tenuis (Herb.) Baker. Unplowed fields. #800.

Sisyrinchium palmeri Greenm. Oak forests and manzanita thickets. #1518.

Sisyrinchium scabrum Schlecht. & Cham. Fields and cliff faces. #680.

Tigridia pavonia (L. *f.*) DC. Cypress forests. #946.

Juncaceae

Juncus articulatus L. Creekbanks. #391.

Juncus confusus Coville. Creekbanks. #357.

Juncus interior Wieg. Creekbanks and cypress forests. #2218.

Liliaceae

Allium rhizomatum Woot. & Standl. Cebollín (S); shevo'oya (P). Fields near creekbanks. #1628.

Calochortus fuscus Schultes. Cypress forests. #1695.

Calochortus venustulus var. *madrensis* (S. Wats.) Reveal & Hess. Fields and open oak forests. #935.

Echeandia durangensis Cruden. Creekbanks and oak forests. #1673.

Echeandia flavescens (Schultes & Schultes) Cruden. Creekbanks and oak forests. #1646.

Milla biflora Cav. Fields and cliff faces. #841.

Schoenocaulon megarhizum M.E. Jones var. *megarhizum*. Cypress forests. #1587.

Zigadenus virescens (H.B.K.) Macbr. Maple forests. #2134.

Nolinaceae

Dasylirion wheeleri var. *durangense* (Trel.) Laferr. Sotol (S); shereki (P). Cliff faces and oak forests. #2268.

Dasylirion wheeleri S. Wats. var. *wheeleri*. Sotol; shereki (P). The two varieties of this species intergrade in Nabogame (Laferrière 1991a). Cliff faces and oak forests. #1314.

Nolina microcarpa S. Wats. Palmilla (S). Pine and oak forests. #1466.

Orchidaceae

Bletia gracilis var. *roezlii* (Reichb.) L.O. Williams. Kiki (P) [name applied to all orchids by some people but restricted to this species by others]. Pine and oak forests. #1529.

Corallorhiza involuta Greenm. Maple forests. #2278.

Epipactis gigantea Dougl. Riverbank. #422.

Govenia liliacea (Lex.) Lindl. Oak and cypress forests. #994.

Habenaria clypteata Lindl. Pine and cypress forests. #815.

Habenaria guadalajara S. Wats. Fallow fields. #944.

Hexalectris grandiflora (A. Richard & Galeotti) L.O. Williams. Pine forests. #1523.

Malaxis fastigiata (Reichb. *f.*) Kuntze. Cypress forests. #1543.

Malaxis myurus (Lindl.) Kuntze. Cypress forests. #1584.

Spiranthes aurantiaca (Llave & Lex.) Hemsley. Unplowed fields. #825.

Spiranthes lanceolata (Aubl.) Leon. Oak forests. #384.

Spiranthes michuacana (Lex.) Hemsley. Fields. #2096.

Spiranthes rubrocalosa B.L. Rob. & Greenm. Fields. #461.

Triphora trianthophora (Sw.) Rydb. Oak forests. #978.

Poaceae

Aegopogon cenchroides Humb. & Bonpl. Cliff faces and oak forests. #725.

Aegopogon tenellus var. *abortivus* Beetle. Cypress forests. #1047.

Agrostis scabra Willd. Cypress forests. #1419.

Aristida adscensionis L. Fields and oak and pine forests. #2303.

Bothriochloa barbinodis (Lag.) Herter. Fields. #1060.

Bouteloua curtipendula (Michx.) Torr. Zacate de navaja (S); navája sha'i (P). Fields and cypress forests. #652.

Bouteloua gracilis (H.B.K.) Steud. Creekbanks. #1902.

Bouteloua hirsuta Lag. Creekbanks. #675.

Bouteloua radicosa (Fourn.) Griffiths. Fields. #783.

Bouteloua repens (H.B.K.) Scribn. & Merr. Oak forests. #1828.

Bromus anomalus Fourn. Creekbanks and forests. #1043.

Chloris submutica H.B.K. Fields. #585.

Chloris virgata Sw. Creekbanks. #549.

Cynodon dactylon (L.) Pers. Fields. #397.

Digitaria sanguinalis (L.) Scop. Fields and creekbanks. #1057.

Echinochloa colonum (L.) Link. Creekbanks. #1854.

Echinochloa crusgalli (L.) P. Beauv. Creekbanks, cultivated fields, and cypress forests. #595.

Echinochloa muricata (P. Beauv.) Fernald. Creekbanks. #1082.

Eleusine indica (L.) Gaertn. Cultivated and noncultivated fields. #1061.

Eleusine multiflora Hochst. Fields. #1056.

Elyonurus barbiculmis Hack. Oak forests. #2154.

Eragrostis intermedia Hitchc. Fields, cliff faces, and cypress forests. #505.

Eragrostis mexicana (Hornem.) Link. Fields. #1063.

Eriochloa acuminata (Presl.) Kunth var. *acuminata*. Fields. #1911.

Eriochloa lemmonii Vasey & Scribn. Oak forests. #1898.

Hackelochloa granularis (L.) Kuntze. Fields. #1905.

Heteropogon melanocarpus (Ell.) Benth. Fields. #1258.

Hilaria swallenii Cory. Fields. #1245.

Muhlenbergia alamosae Vasey. Oak forests. #1396.

Muhlenbergia annua (Vasey) Swallen. Creekbanks. #1872.

Muhlenbergia argentea Vasey. Oak forests. #2184.

Muhlenbergia dumosa Scribn. Creekbanks. #1413.

Muhlenbergia durangensis Herrera *vel aff.* Pine forests. #1416.

Muhlenbergia elongata Beal. Fields. #2128.

Muhlenbergia emersleyi Vasey. Cliff faces. #732.

Muhlenbergia leptoura (Piper) Hitchc. Springs. #2164.

Muhlenbergia montana (Nutt.) Hitchc. Pine and cypress forests. #1953.

Muhlenbergia polycaulis Scribner. Maple forests. #2131.

Muhlenbergia rigens (Benth.) Hitchc. Cypress forests. #1244.

Muhlenbergia schmitzii Hackel. Springs. #2289.

Muhlenbergia scoparia Vasey. Pine forests. #1815.

Muhlenbergia shepherdii (Vasey) Swallen. Sunlit spring. #2162.

Oplismenus burmannii (Retz.) P. Beauv. Cypress forests. #2230.

Panicum bulbosum H.B.K. Hierba de la flecha (S); nor sha'i (P). Fields and forests. #665.

Panicum hirticaule Presl. Fields and creek banks. #677.

Paspalum convexum Willd. Fields and creekbanks. #629.

Paspalum distichum L. Creekbanks. #1951.

Paspalum setaceum var. *stramineum* (Nash) D. Banks. Fields. #1636.

Paspalum squamulatum Fourn. Cypress forests. #2104.

Pereilema crinitum Presl. Fields and cypress forests. #2021.

Piptochaetium fimbriatum (H.B.K.) A. Hitchc. Pine forests. #1923.

Poa annua L. Creekbanks. #497.

Polypogon elongatus H.B.K. Creekbanks. #504.

Polypogon viridis (Gouan) Breistr. Creekbanks. #494.

Rhynchelytrum repens (Willd.) C.E. Hubbard. Fields. #604.

Schizachyrium cirratum (Hack.) Woot. & Standl. Forests. #2068.

Schizachyrium sanguineum (Retz.) Alston. Oak forests. #1125.

Setaria grisebachii Fourn. Fields and oak forests. #678.

Setaria macrostachya H.B.K. Fields. #601.

Setaria parviflora (Poir.) Kerg. Fields. #1836.

Setaria pumila (Poir.) Roemer & Schultes. Creekbanks and cypress forests. #663.

Sorghastrum nutans (L.) Nash. Creekbanks and oak and cypress forests. #2224.

Sporobolus indicus (L.) R. Br. Fields and oak forests. #586.

Trachypogon secundus (Presl.) Scribn. Fields and pine forests. 1064.

Tripsacum lanceolatum Fourn. Cliff faces and oak and pine forests. #721.

Pontederiaceae

Heteranthera limosa (Sw.) Willd. Aquatic. #2005.

Heteranthera peduncularis Benth. Aquatic. #2002.

Potamogetonaceae

Potamogeton foliosus Raf. Aquatic. #1435.

Potamogeton pusillus L. Aquatic. #1403.

Smilacaceae

Smilax moranensis Mart. & Gal. var. *moranensis*. Maple forests. #2252.

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